

Trends in Alaska Salmon Markets

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Outline of this Presentation

1. Recent trends in Alaska salmon markets
 - Catches
 - Production
 - End-markets
 - Prices
 - Value
 - Permit prices
2. What explains the dramatic recovery in Alaska salmon prices over the past decade?
3. Factors which may affect prices in 2012
4. Factors affecting the long-term future for Alaska salmon
5. Appendix: Data sources

Thank you to Icicle Seafoods, Inc.

- For \$1 million in donations to the University of Alaska over the past five years
- Which have supported programs at many UA campuses in many Alaska communities
 - Including Kodiak College
 - including generous donations to the UAA Institute of Social and Economic Research (ISER)
- Which have made it possible for me to continue to track seafood market trends
 - including preparing this presentation and traveling to ComFish 2012

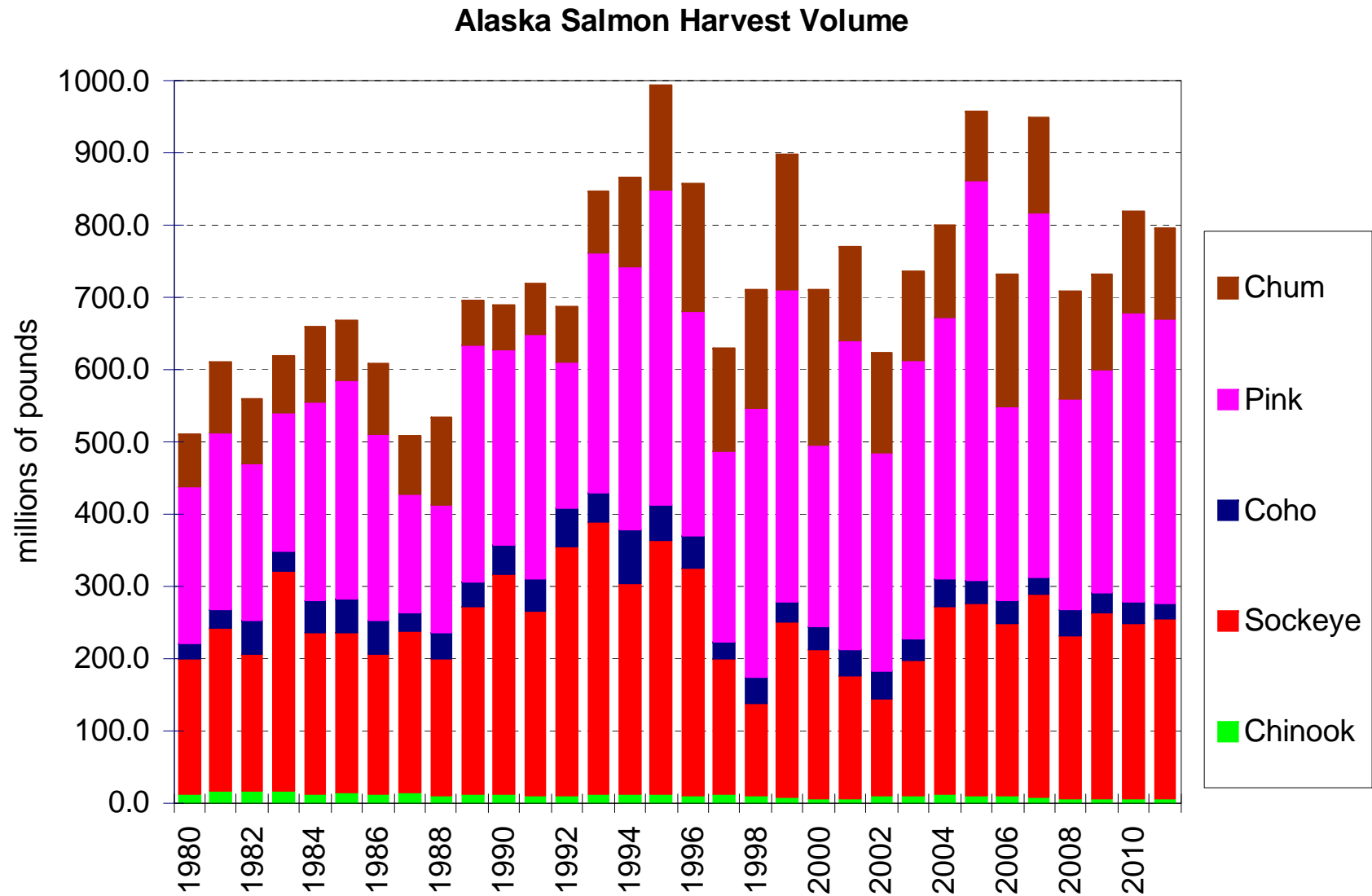
My research activities and conclusions are totally independent of Icicle.

1. Recent Trends in Alaska Salmon Markets

The first part of this presentation consists of graphs showing trends in Alaska salmon markets. Some of the most important trends over the past decade include:

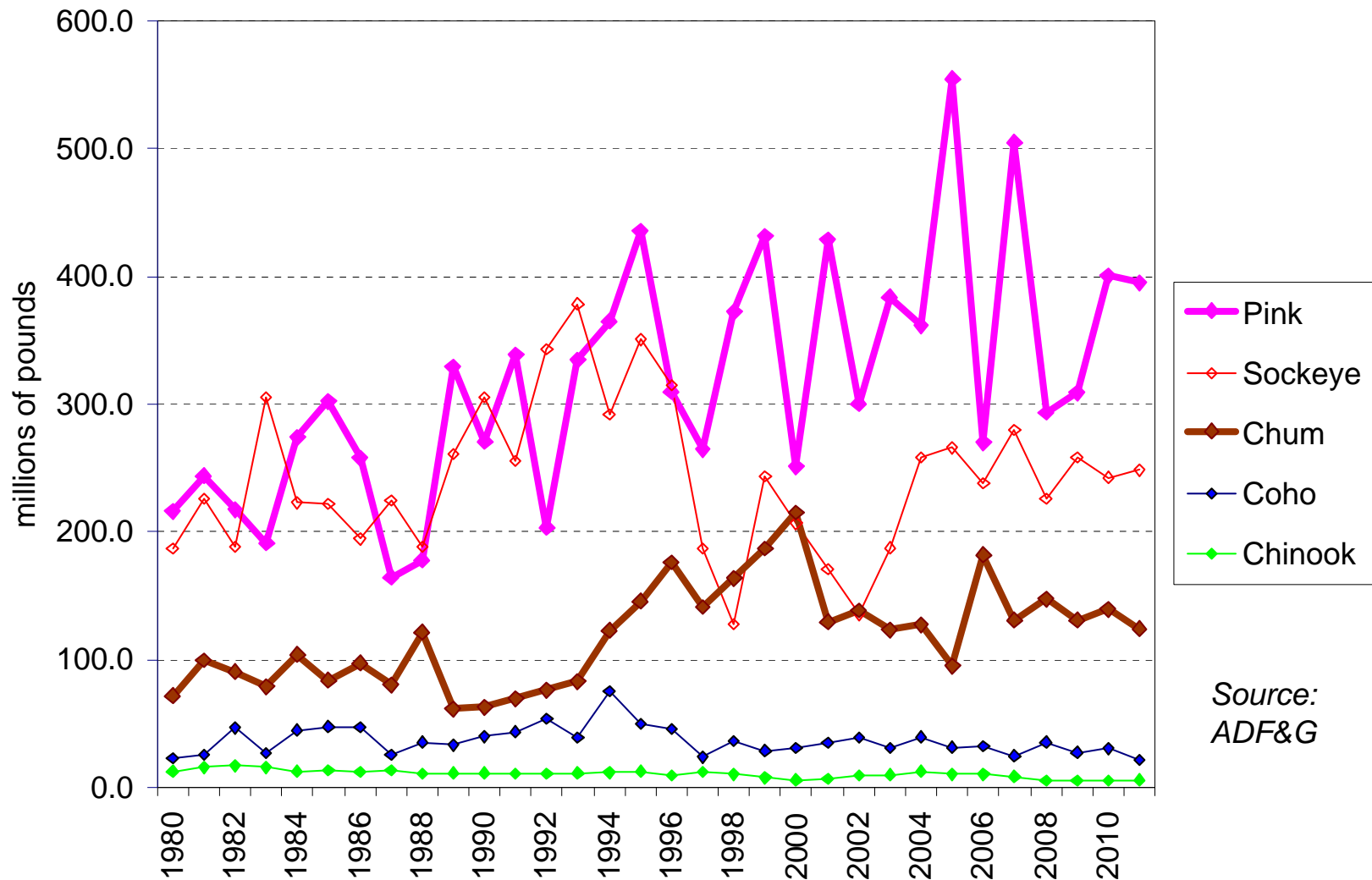
- Harvests have been strong
- The frozen share of pink salmon production has increased dramatically
- US markets for frozen salmon have become much more diverse:
 - The shares exported to Japan have declined dramatically
 - The shares consumed in US domestic markets have increased
 - The shares exported to the EU have increased
 - The shares exported to China have increased dramatically)
 - Most of the salmon exported to China is reprocessed into value-added products which are re-exported to US and EU markets)
- Ex-vessel and wholesale prices have risen dramatically since 2002
- Ex-vessel and wholesale value have risen dramatically since 2002
- Both fishermen and processors have shared in the increase in prices and value
- Permit price shave increased dramatically

Alaska salmon harvests have generally been strong over the past decade. In this presentation, I focus primarily on sockeye, pink and chum markets—because these species account for most of Alaska salmon harvest volume and value.



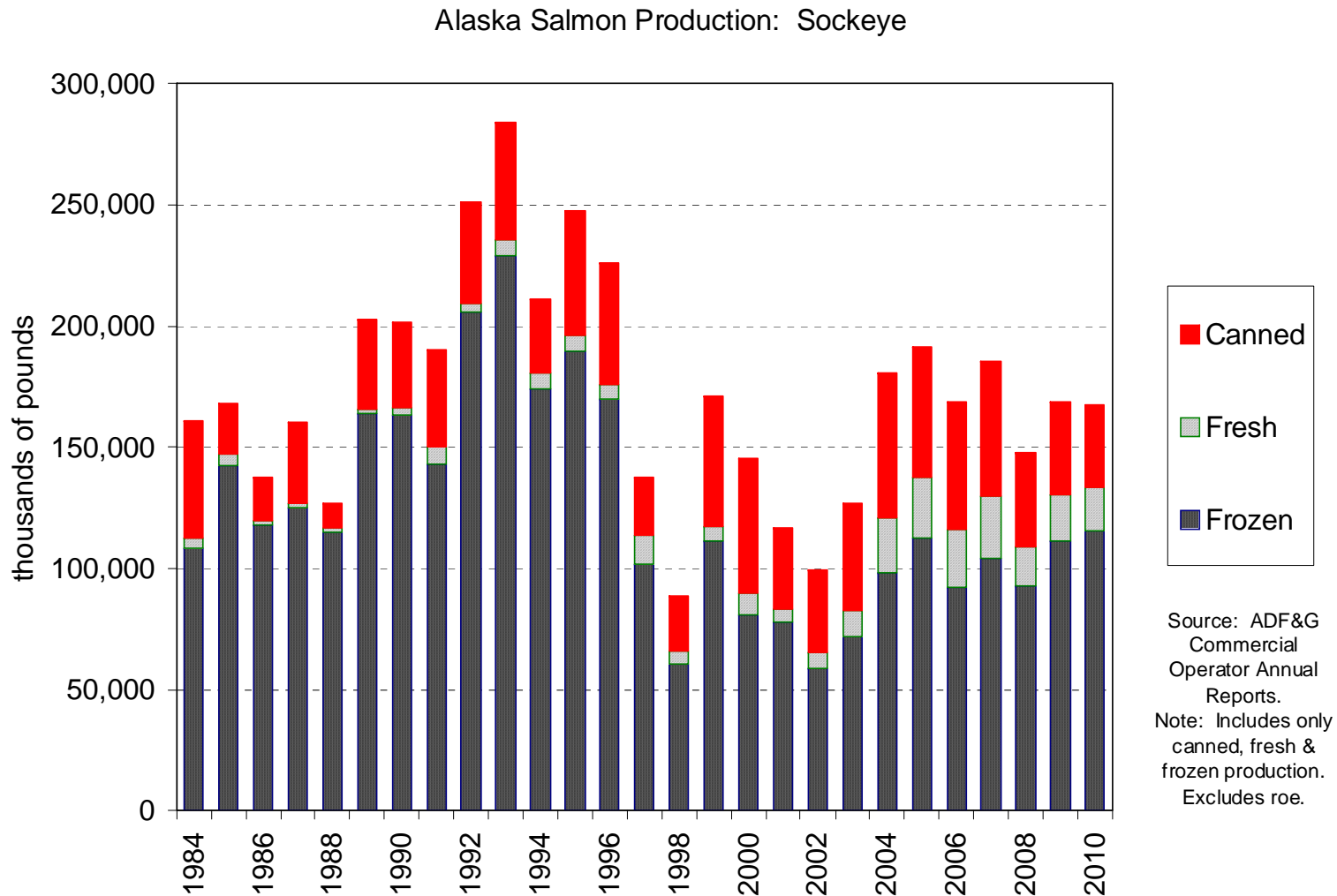
- Harvest trends differ by species:
- * High but widely fluctuating pink harvests
 - * Sockeye harvests up from 1998-2003 lower levels
 - * Chum harvests fairly strong and consistent

Alaska Salmon Harvest Volume, by Species



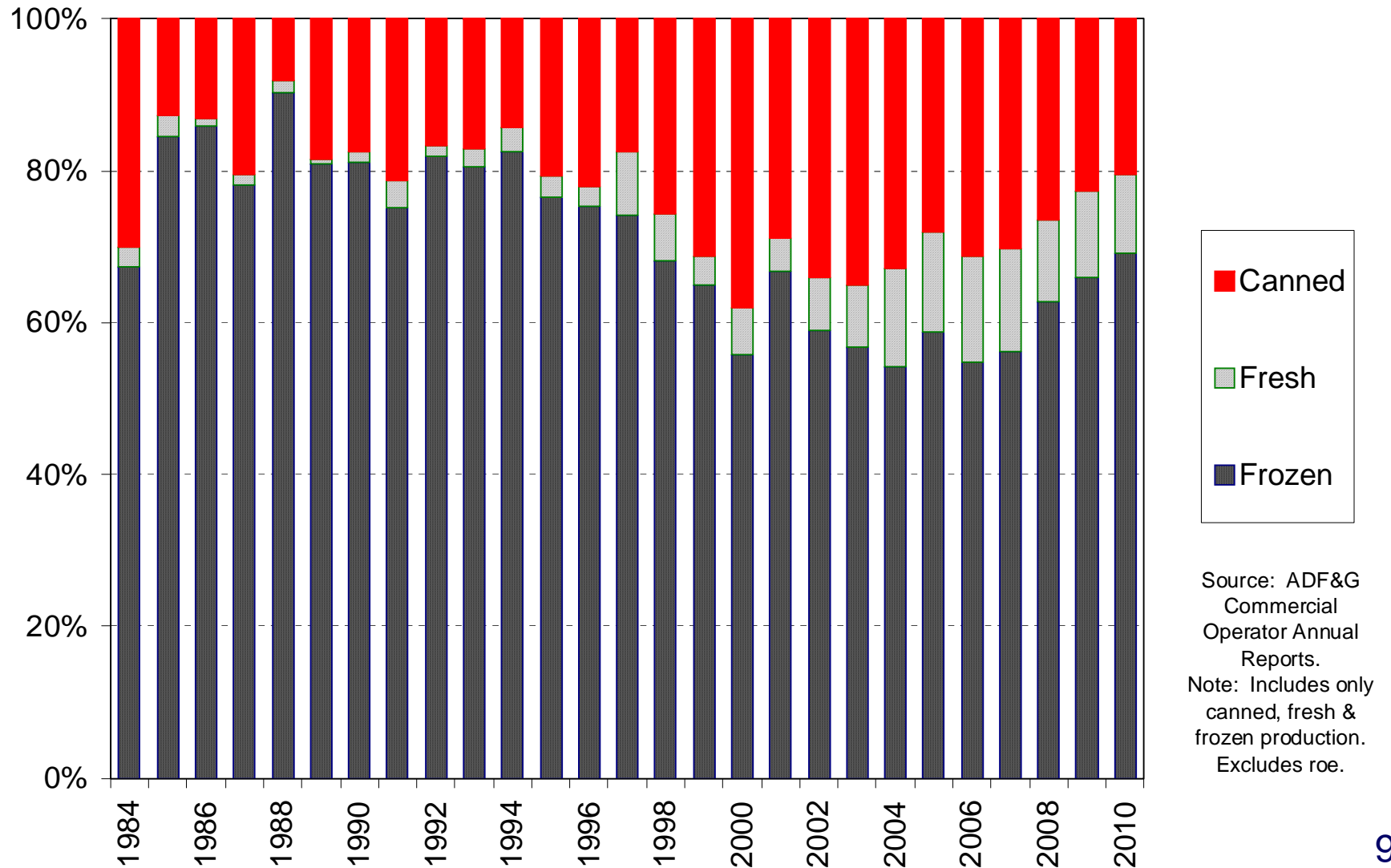
The next group of slides shows trends in the production of canned, fresh and frozen production from Alaska sockeye, pink and chum salmon.

Frozen, canned and fresh salmon are all important sockeye salmon products. Frozen sockeye production fell dramatically in the 1990s as harvests fell and as the frozen share of production declined.

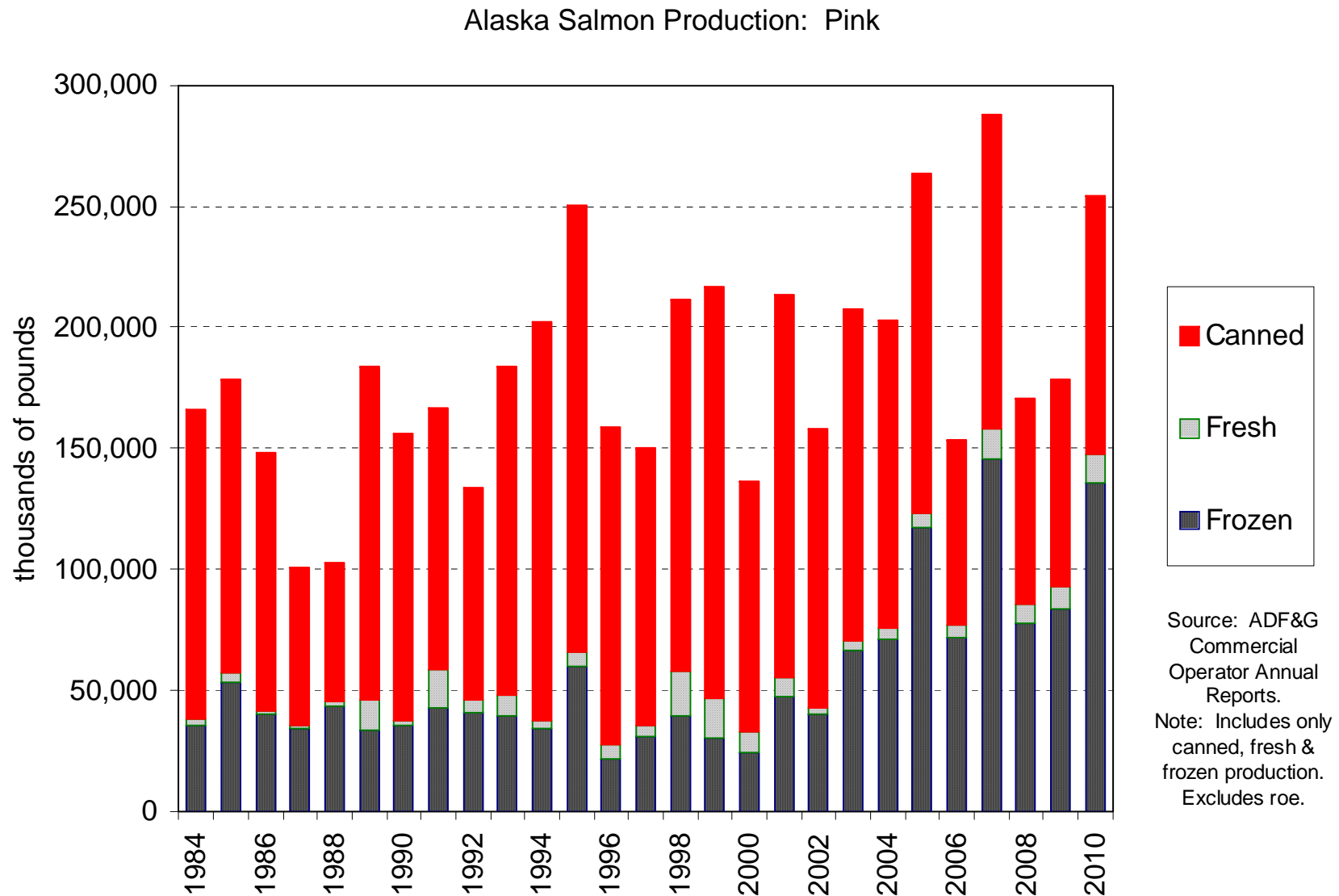


As sockeye harvests increased in the 2000s the frozen share of sockeye production also increased.

Share of Alaska Salmon Production: Sockeye

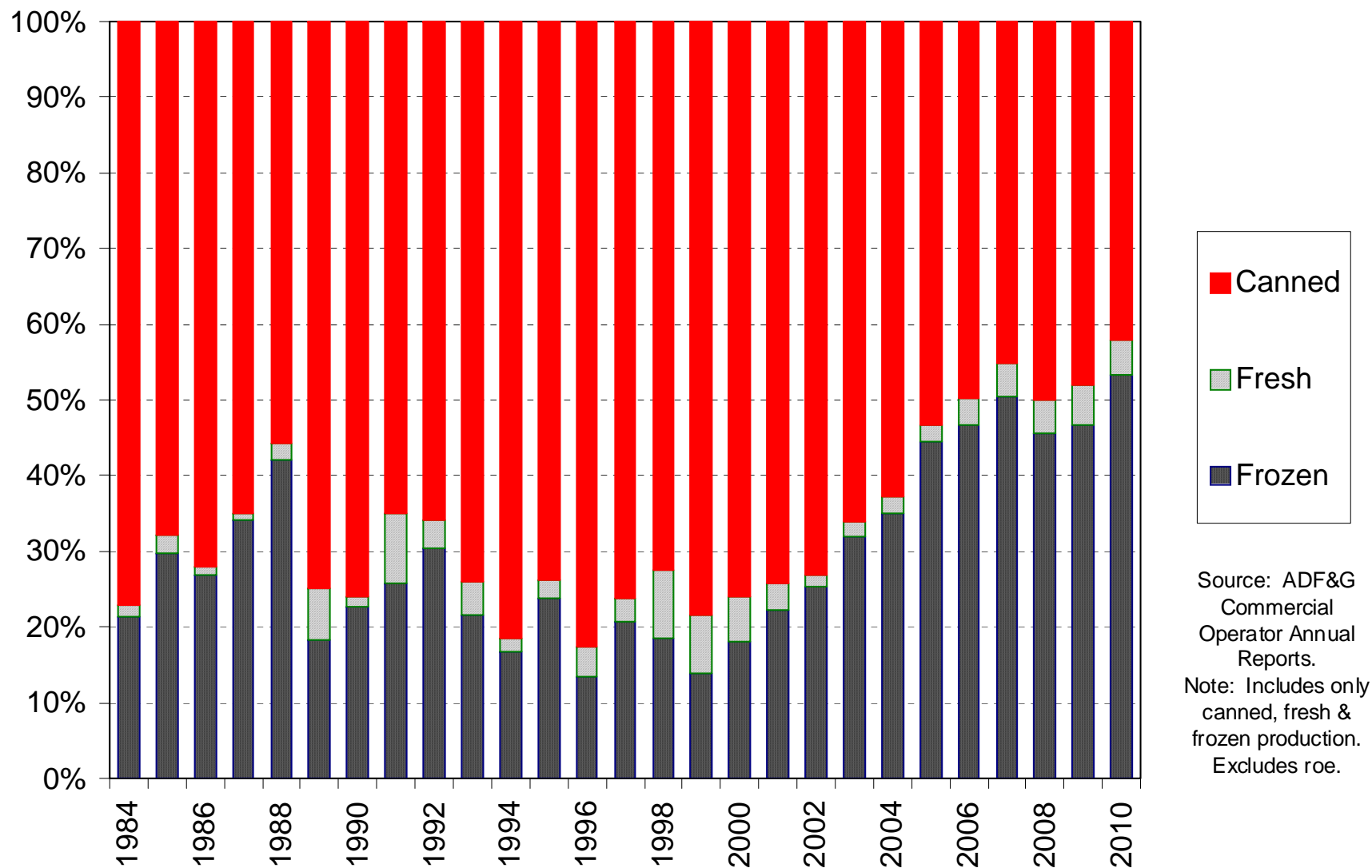


Historically most Alaska pink salmon was canned. Since 2002, however, frozen pink salmon production has been increasing rapidly.

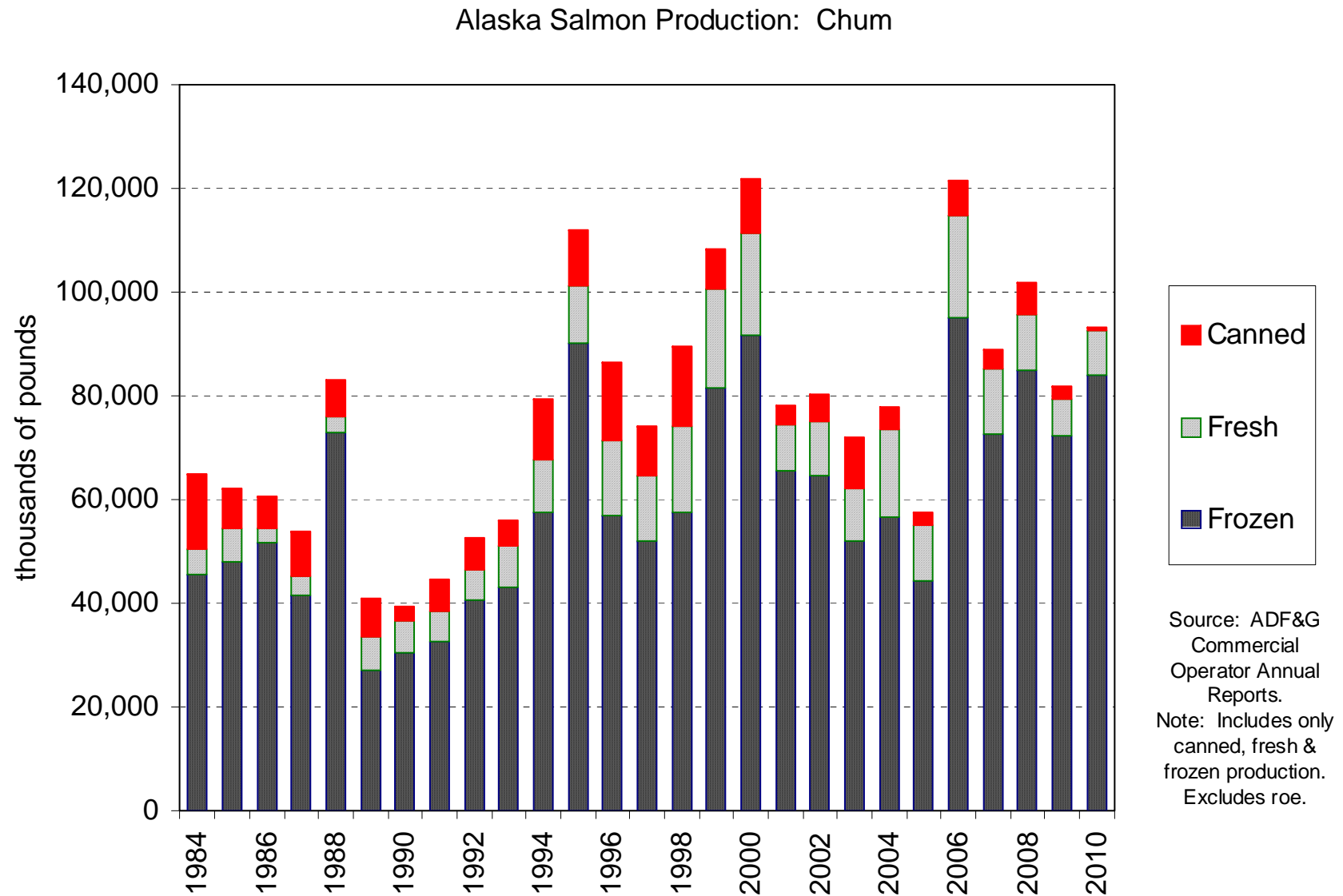


More than half of 2010 Alaska pink salmon production was frozen in 2010—a dramatic increase from less than 20% in the late 1990s.

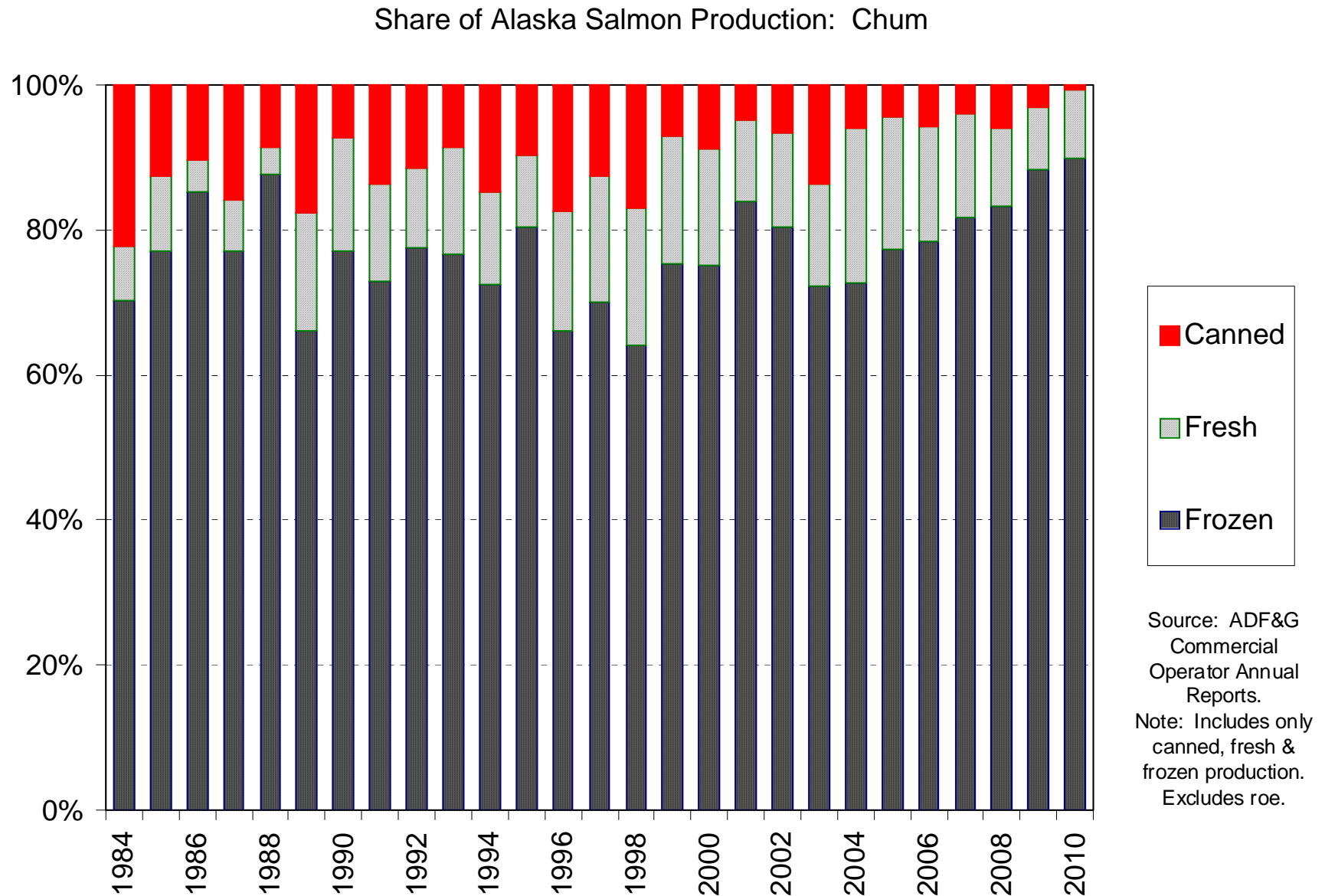
Share of Alaska Salmon Production: Pink



Most Alaska chum salmon is frozen.

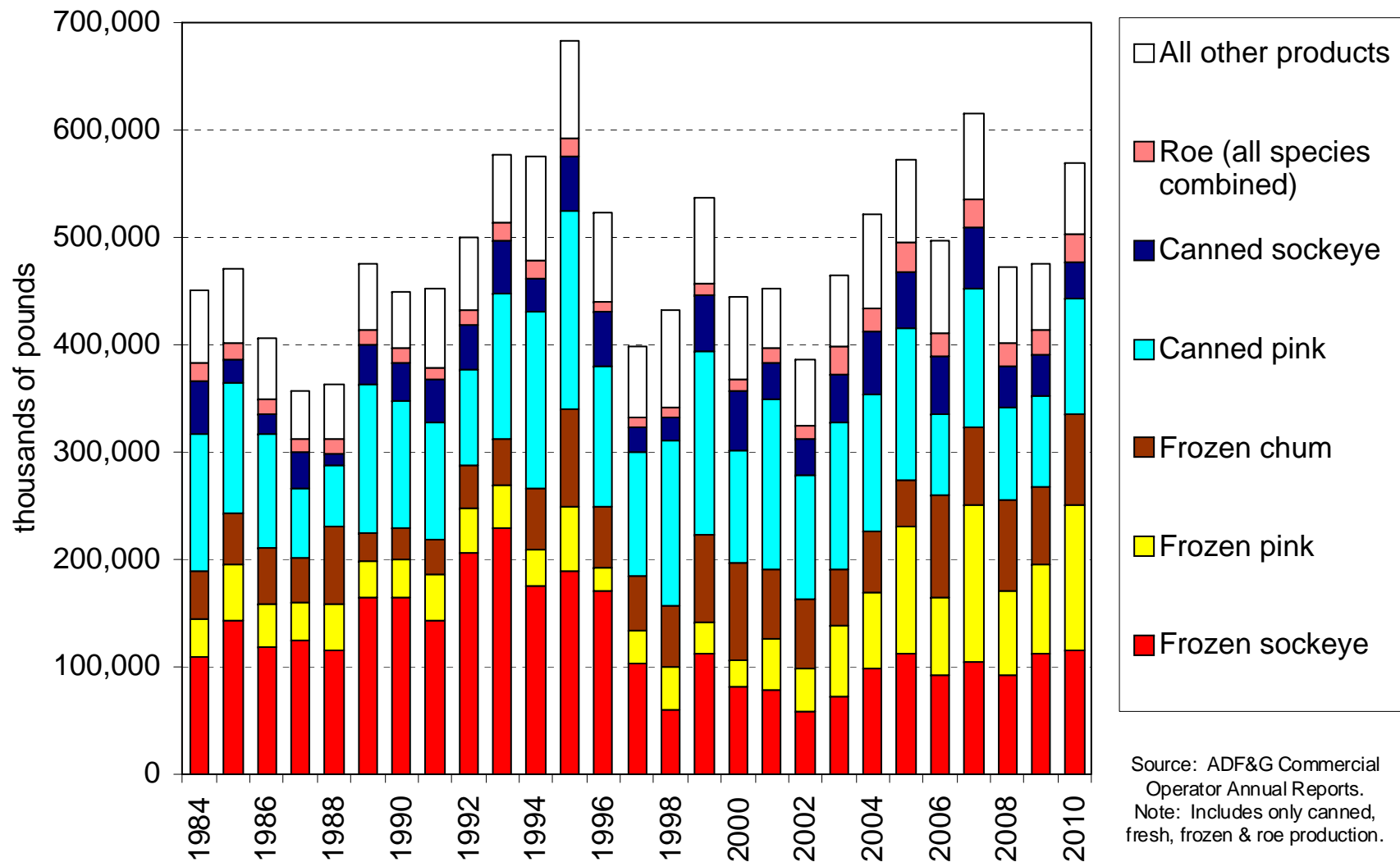


The frozen share of Alaska chum salmon production has been increasing, while the fresh share has declined.



Five major product forms account for most of the volume of Alaska salmon production: frozen sockeye, frozen pink, frozen chum, canned pink, and canned sockeye.

Volume of Alaska Salmon Production, by Product

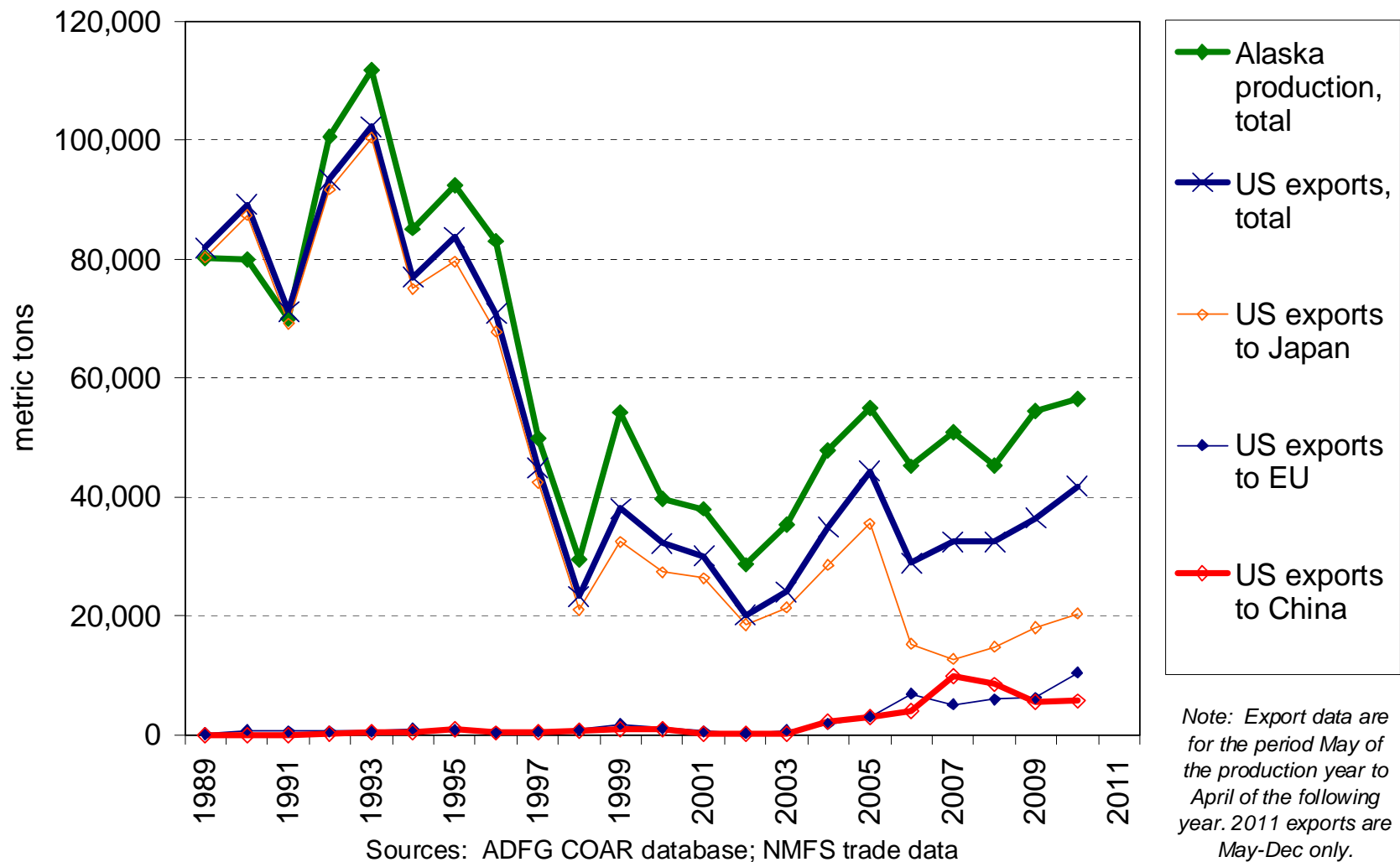


The next ten graphs show trends in exports and estimated end-markets for each of the five major Alaska salmon product forms (frozen sockeye, frozen pink, frozen chum, canned pink, canned sockeye).

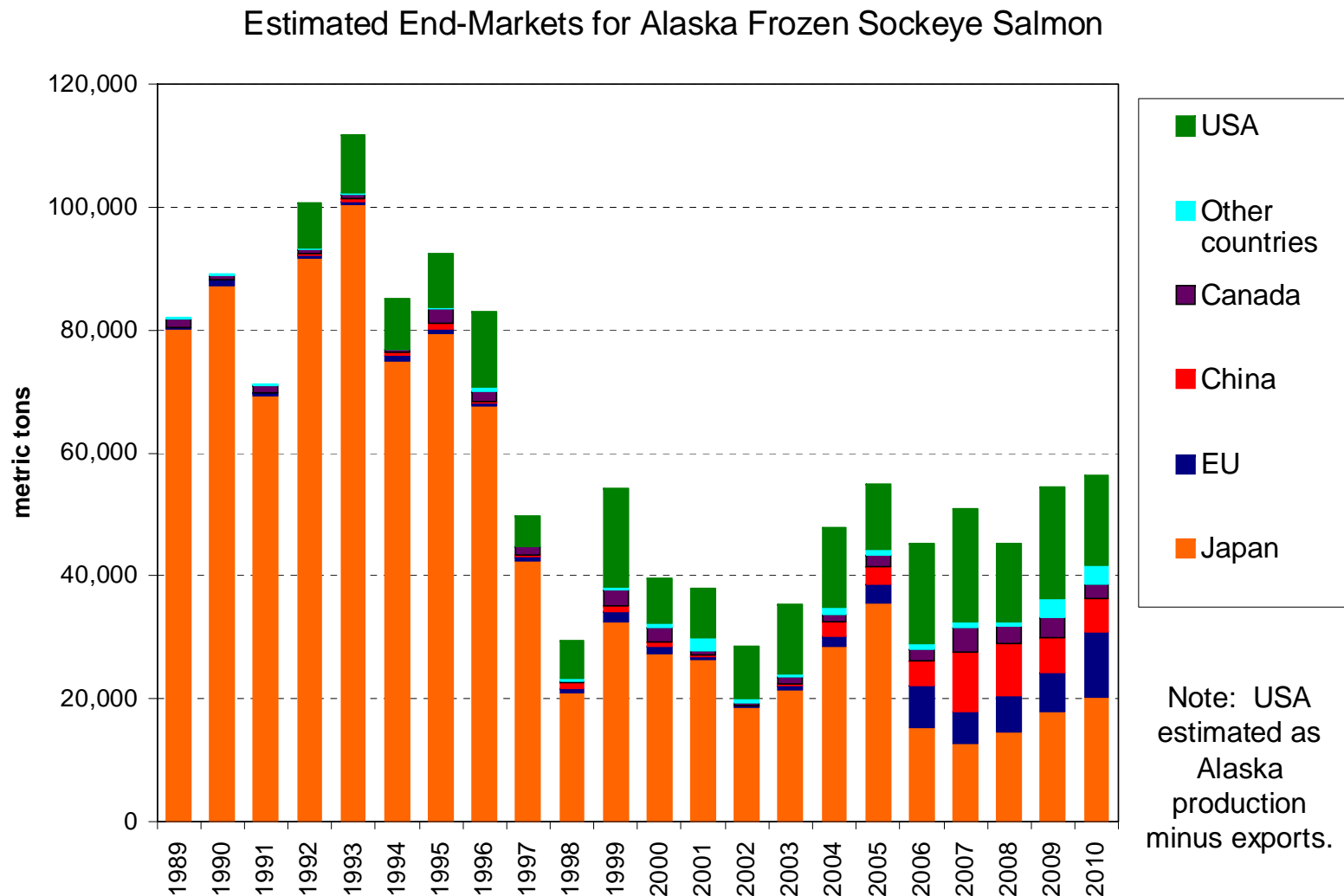
- There are two graphs for each product form.
- In the first graph for each product form:
 - The green line shows total Alaska production of the product as reported in the Commercial Operator Annual Report (COAR data)
 - The blue line shows total US exports of the product as reported in NMFS “Foreign Trade in Fisheries Products” data.
 - The other lines show exports of the product to the three or four largest foreign markets
 - By comparing the green line and the blue line, you can get a sense of the relative share of total production which is exported.
- The second graph is a stacked bar graph showing my estimates of the major end-markets for each product form.
 - The estimates for the different export markets are based on NMFS “Foreign Trade in Fisheries Products” data
 - I calculated the estimates for the “USA” by subtracting reported US exports (for the period from May to April of the following year) from reported Alaska production. This should be considered only an approximate estimate!

Over the past decade, the export share of Alaska frozen sockeye salmon production has declined. Frozen exports to Japan—which used to account for almost all frozen sockeye exports—have declined dramatically. Exports to China and the EU have risen significantly.

Alaska Production & U.S. Exports: Frozen Sockeye Salmon

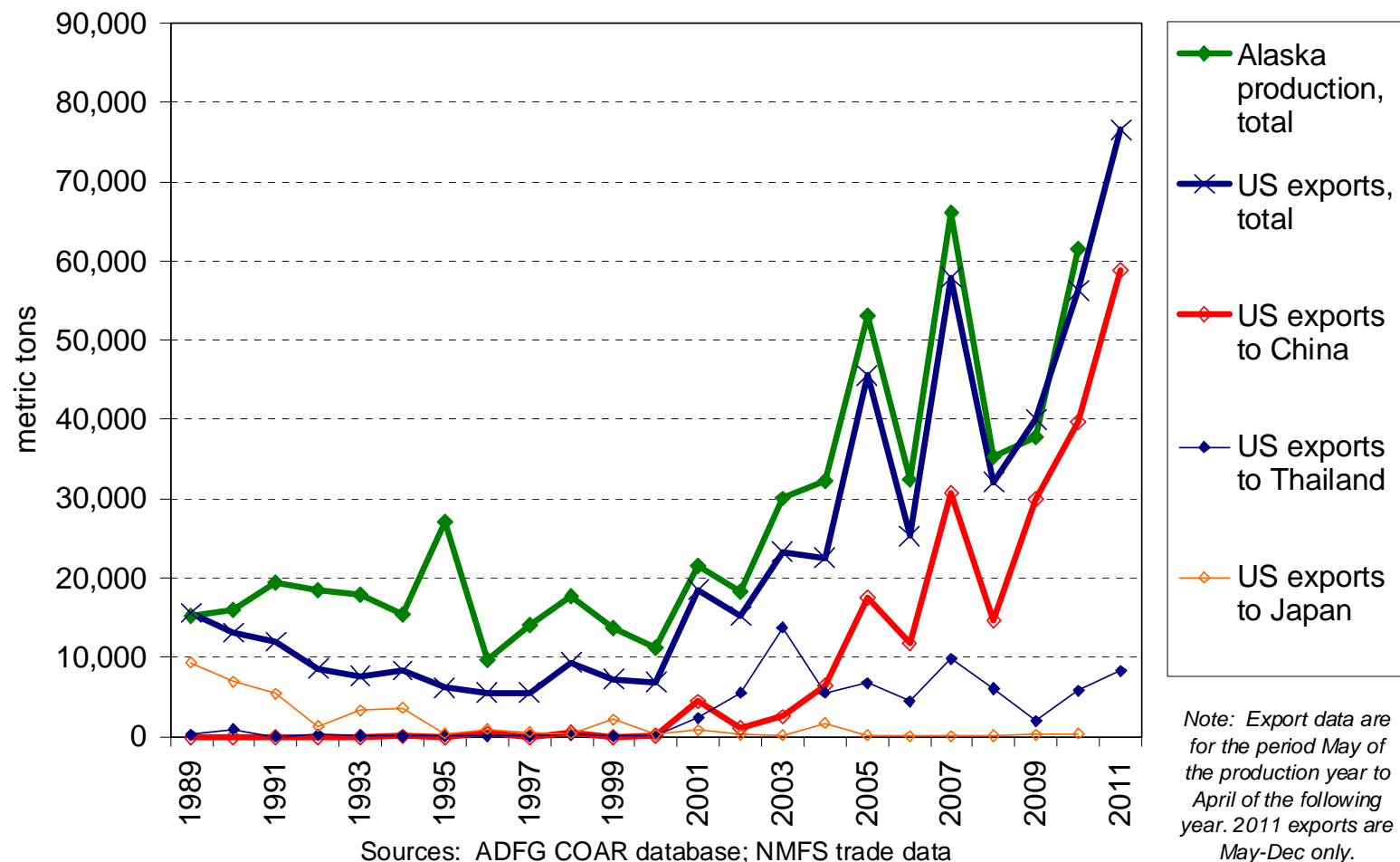


Over the past decade, end markets for Alaska frozen sockeye have become much more diversified. Formerly almost all frozen sockeye was exported to Japan. Although Japan still remains the largest market, now the USA, EU and China have all become important markets as well.



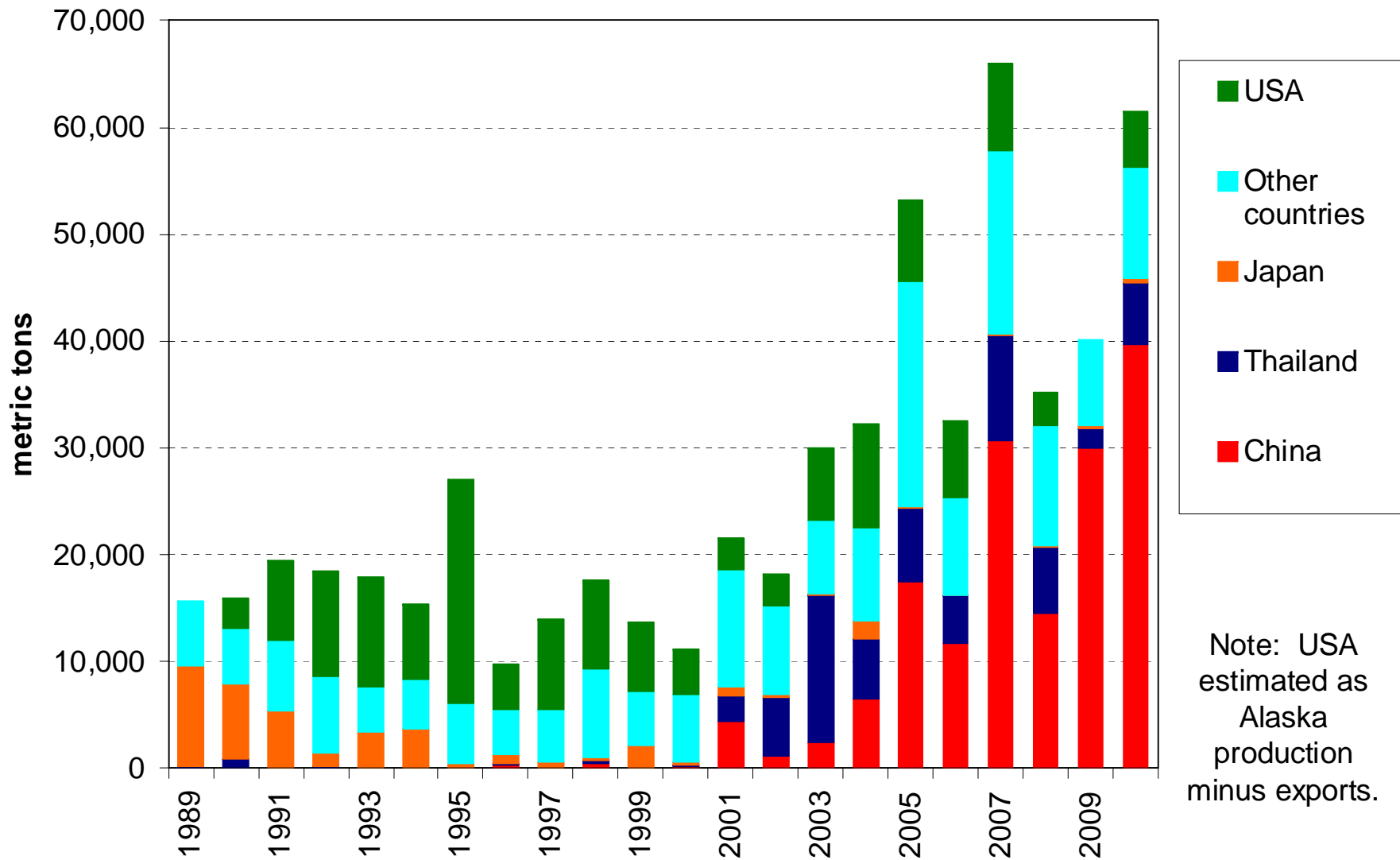
Especially during the past decade, almost all frozen pink salmon production has been exported, mostly to China. There has been a very dramatic increase in frozen pink salmon exports to China. Note that most of this frozen pink salmon is not being consumed by Chinese people! Most of it is reprocessed in China into value-added products which are re-exported to the US, EU and other markets. (This is also what is happening to US frozen sockeye and frozen chum exports to China.)

Alaska Production & U.S. Exports: Frozen Pink Salmon



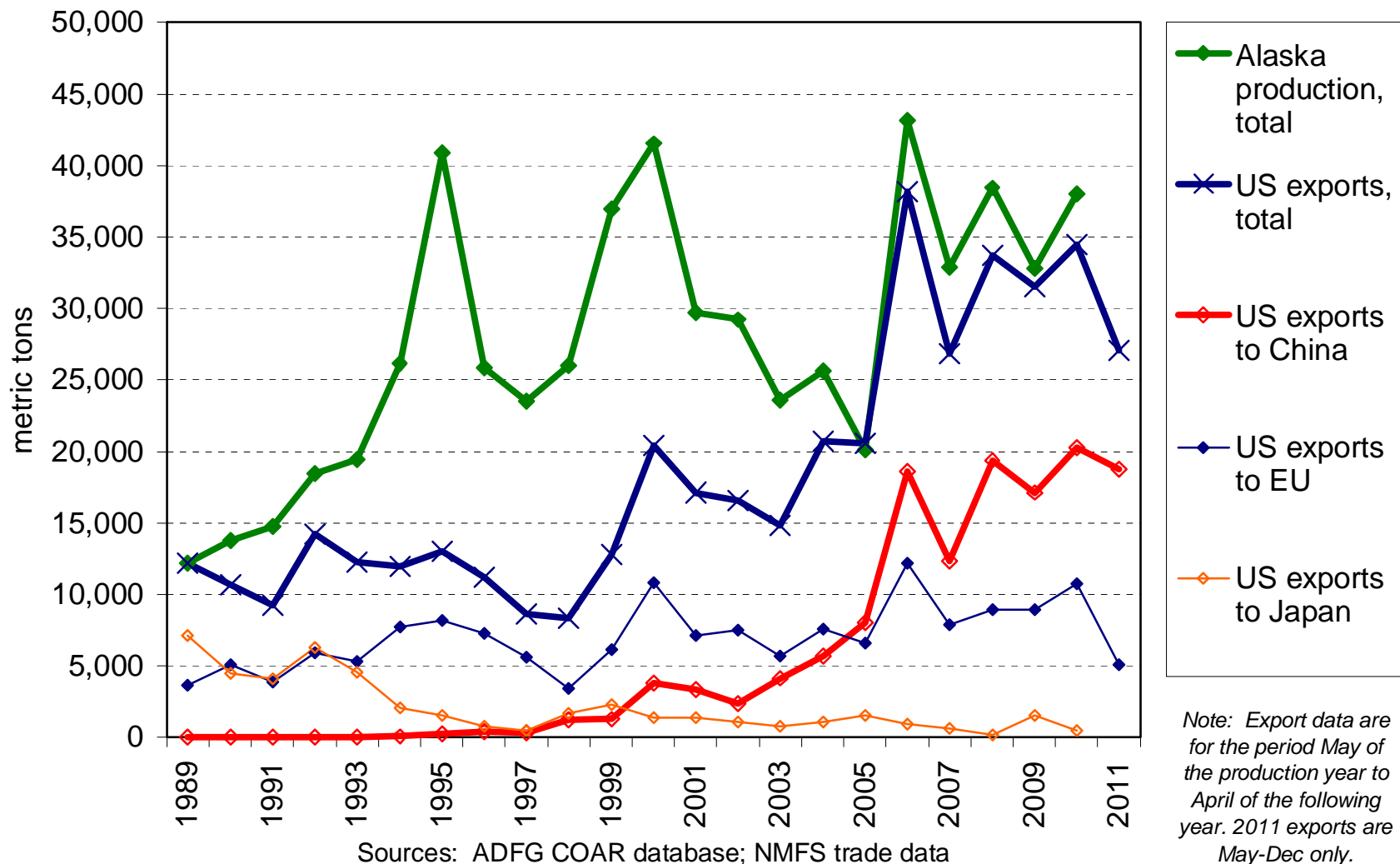
Most of the dramatic increase in Alaska frozen pink salmon production over the past decade has gone to China. Note that significant volumes are also exported to Thailand for reprocessing.

Estimated End-Markets for Alaska Frozen Pink Salmon



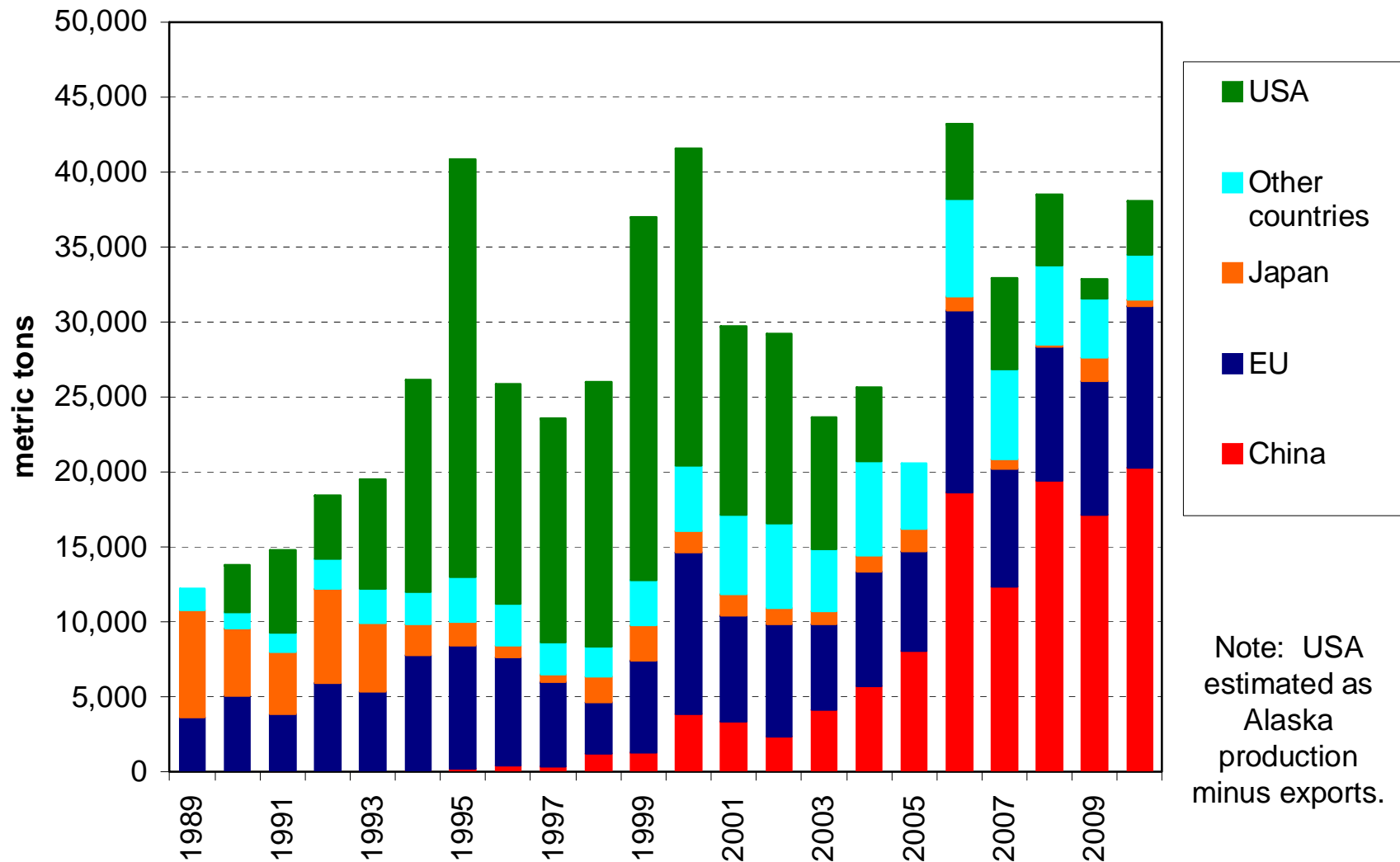
Over the past decade the export share of frozen chum salmon has risen dramatically. Since 2005 almost all frozen chum salmon has been exported. Exports to China have grown dramatically. The EU is also a very important export market.

Alaska Production and U.S. Exports: Frozen Chum Salmon



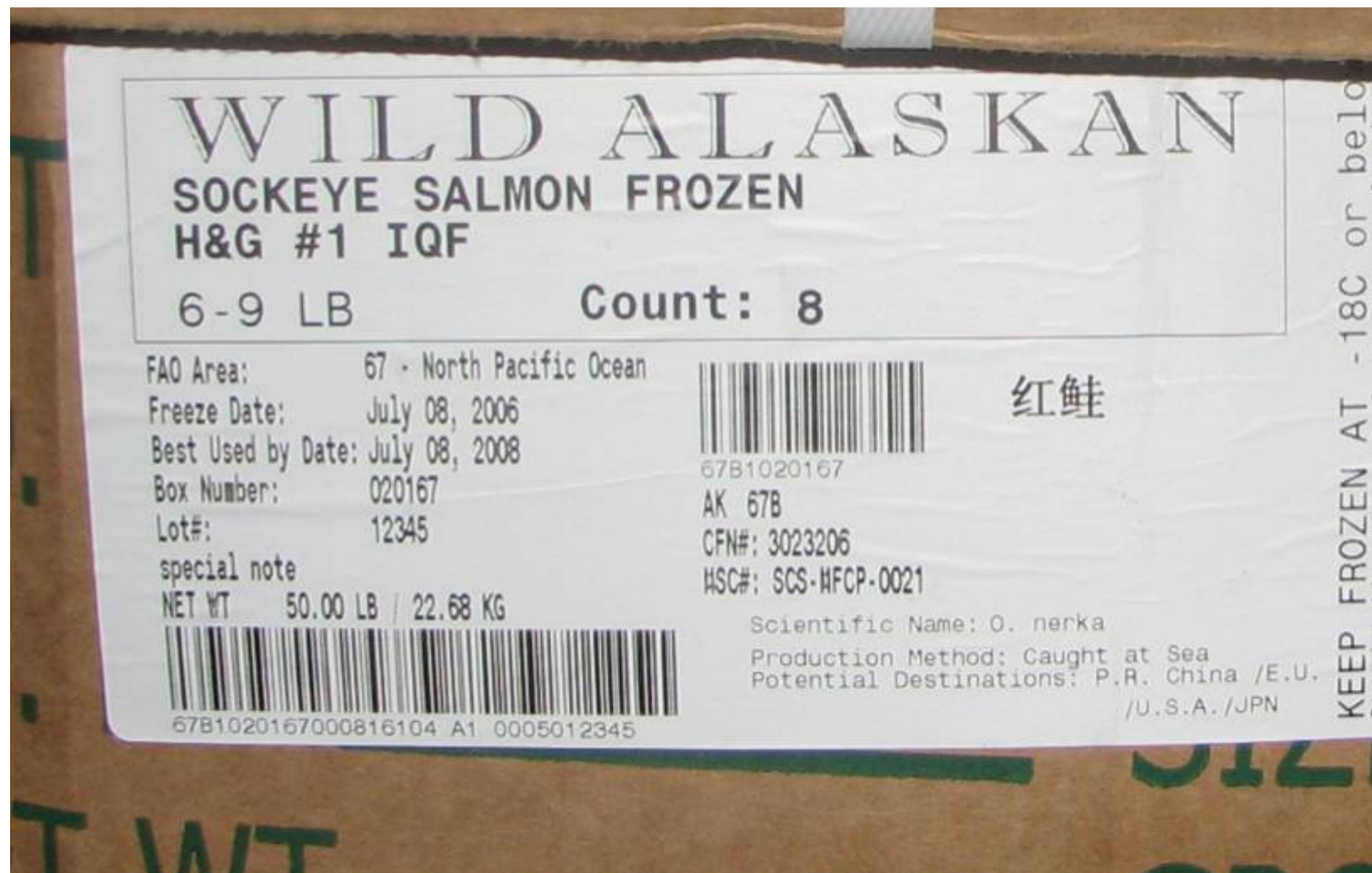
Over the past decade, exports of frozen chum salmon to China have risen dramatically, while estimated US domestic consumption has fallen. The EU is another very important export market.

Estimated End-Markets for Alaska Frozen Chum Salmon



Because China has become such an important market for Alaska frozen salmon over the past decade, I have included a few pictures in this presentation that I took several years ago at a processing plant in Qingdao, China, which reprocesses Alaska frozen salmon.

The cold storage at the plant was full of boxes of frozen H&G salmon (sockeye, coho, pink and chum) like the box in this picture.



The first stage of reprocessing is thawing the frozen H&G salmon.



Next workers fillet the salmon, after which the pinbones are pulled by hand.



The boneless fillets are placed in trays for freezing.




After freezing the frozen fillets are cut into portions.



This is the label on a box of frozen coho fillets.

COHO SALMON FILLET PORTION
(ONCORHYNCHUS KISUTSH)
PINBONED, SKIN-ON
4 OZ VAC PAC


480933


LOT: CT 17467

DAYCODE: QJD13C711

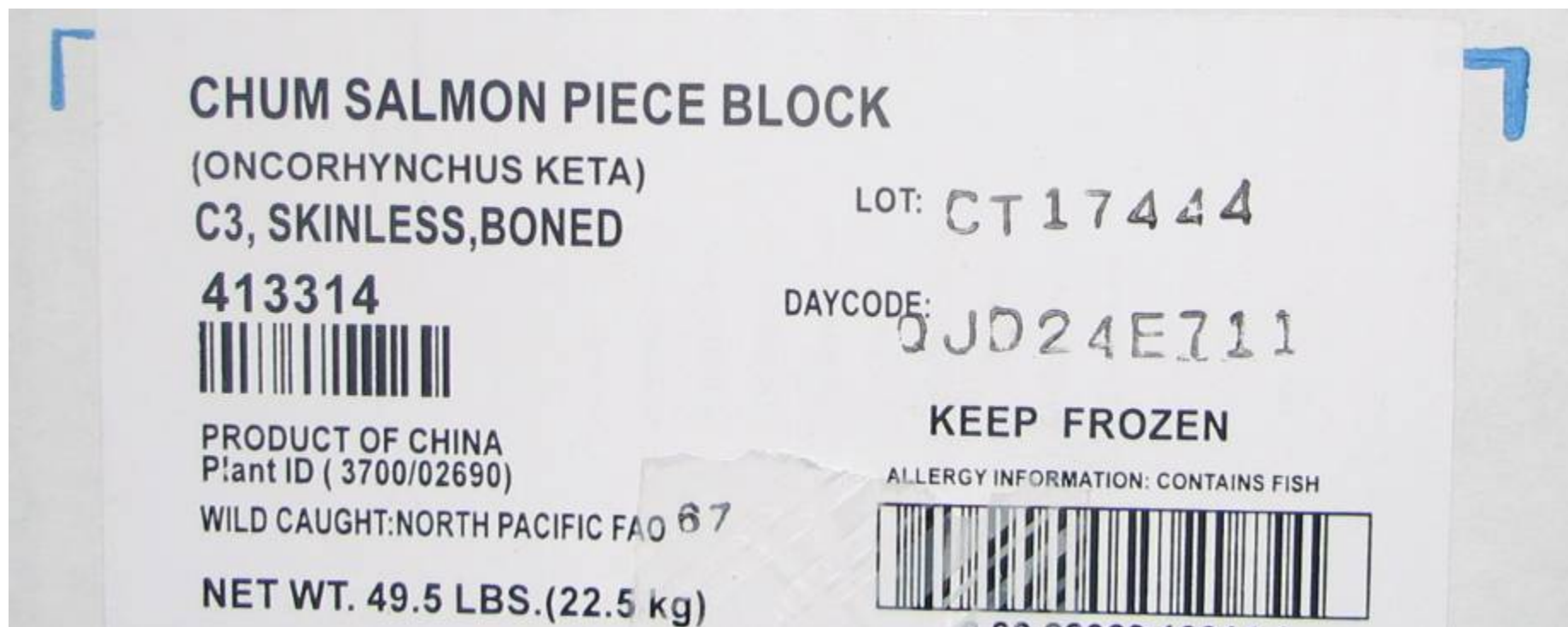
PRODUCT OF CHINA
Plant ID: 3700/02690
WILD CAUGHT: NORTH PACIFIC FAO

67

KEEP FROZEN
ALLERGY INFORMATION: CONTAINS FISH


NET WT. 10 LBS. (4.54 kg)

This is the label on a box of skinless boned chum salmon blocks.



This is the cover on the box for one of the many value-added products manufactured for the European market at the plant
(*Wildlachs* is German for “wild salmon”)

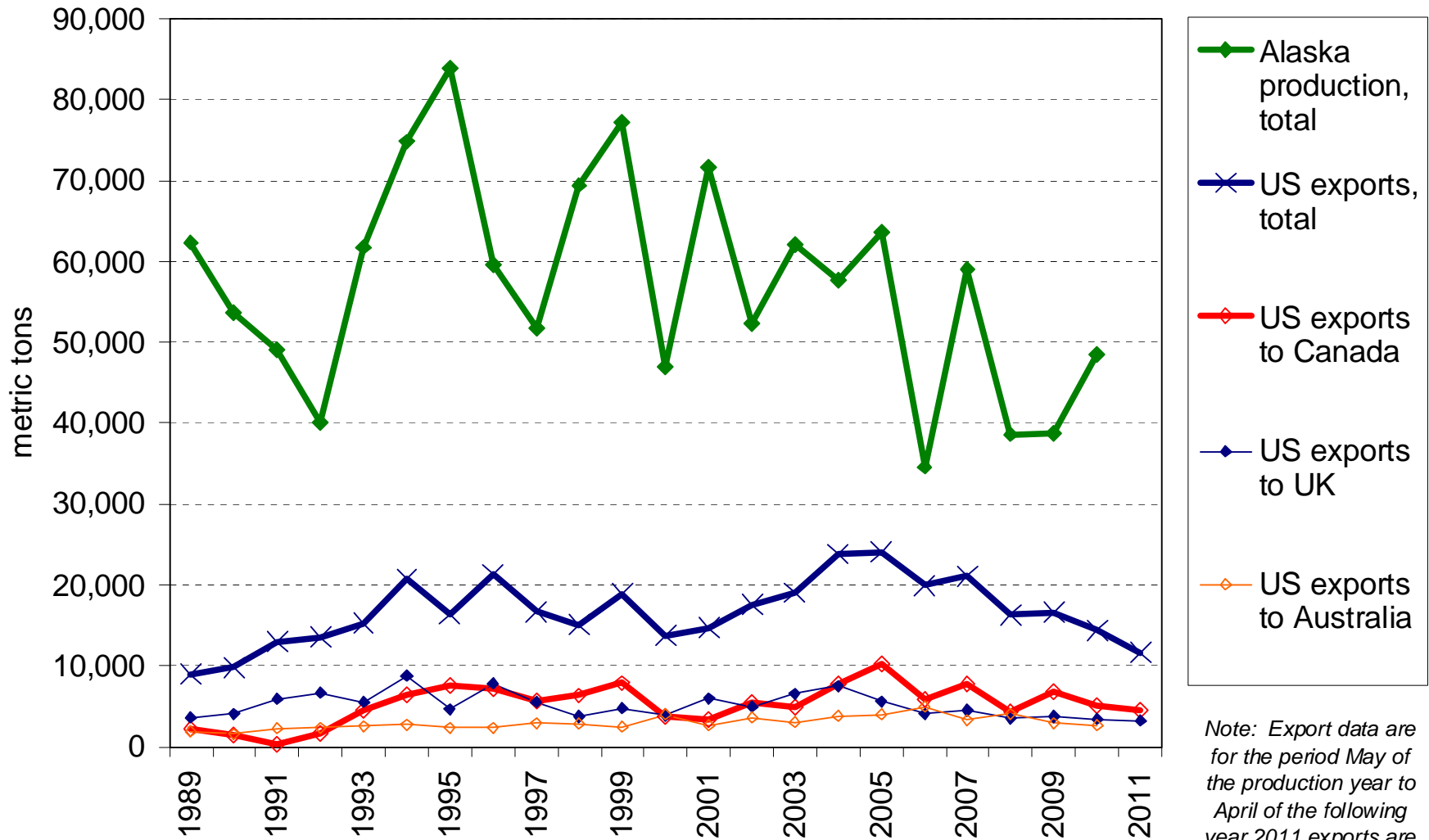


Very large numbers of workers are employed at the plant.



Exports account for a much smaller share of Alaska canned pink salmon production than for frozen salmon.

Alaska Production and US Exports: Canned Pink Salmon

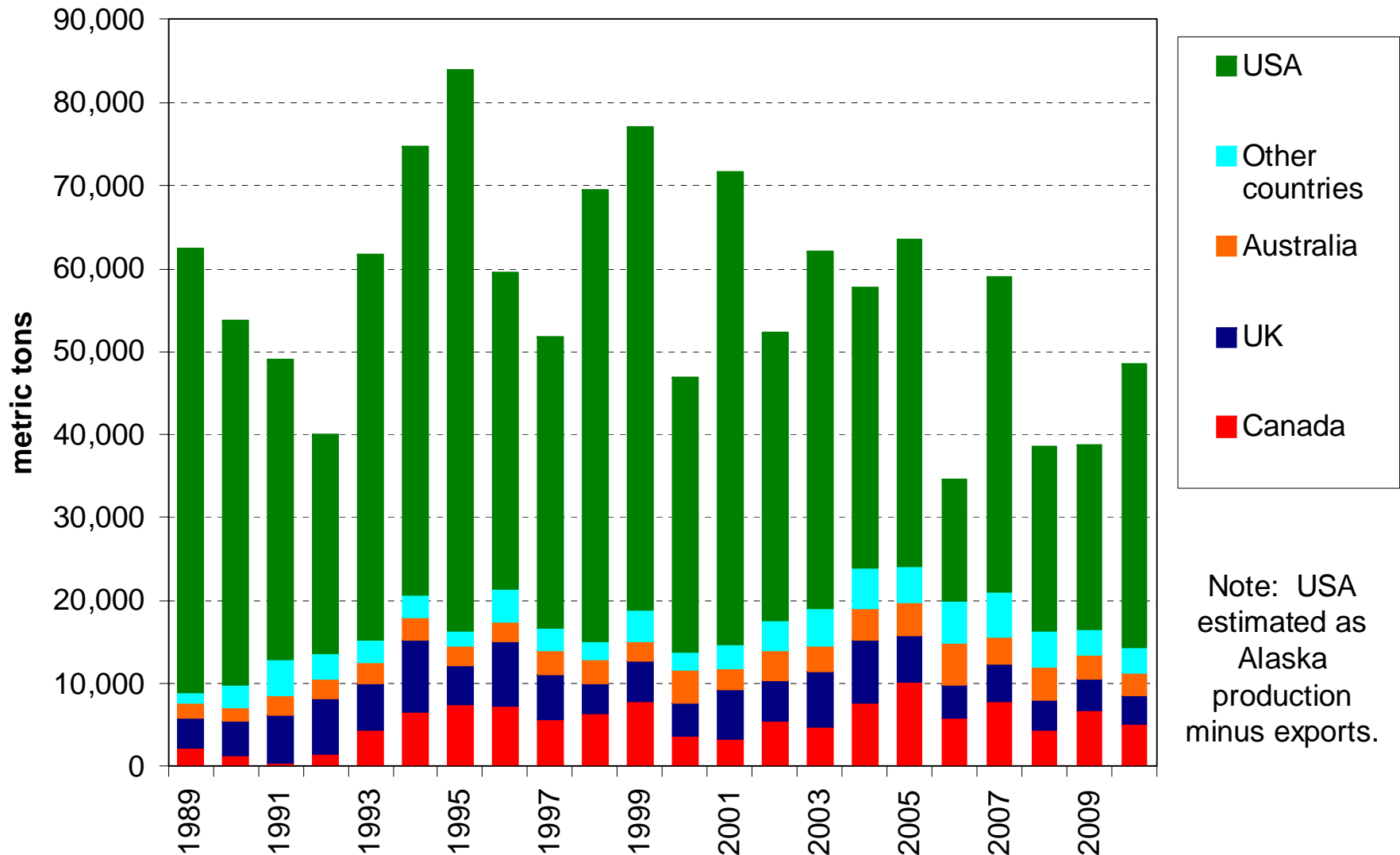


Sources: ADFG COAR database; NMFS trade data

Note: Export data are for the period May of the production year to April of the following year. 2011 exports are May-Dec only.

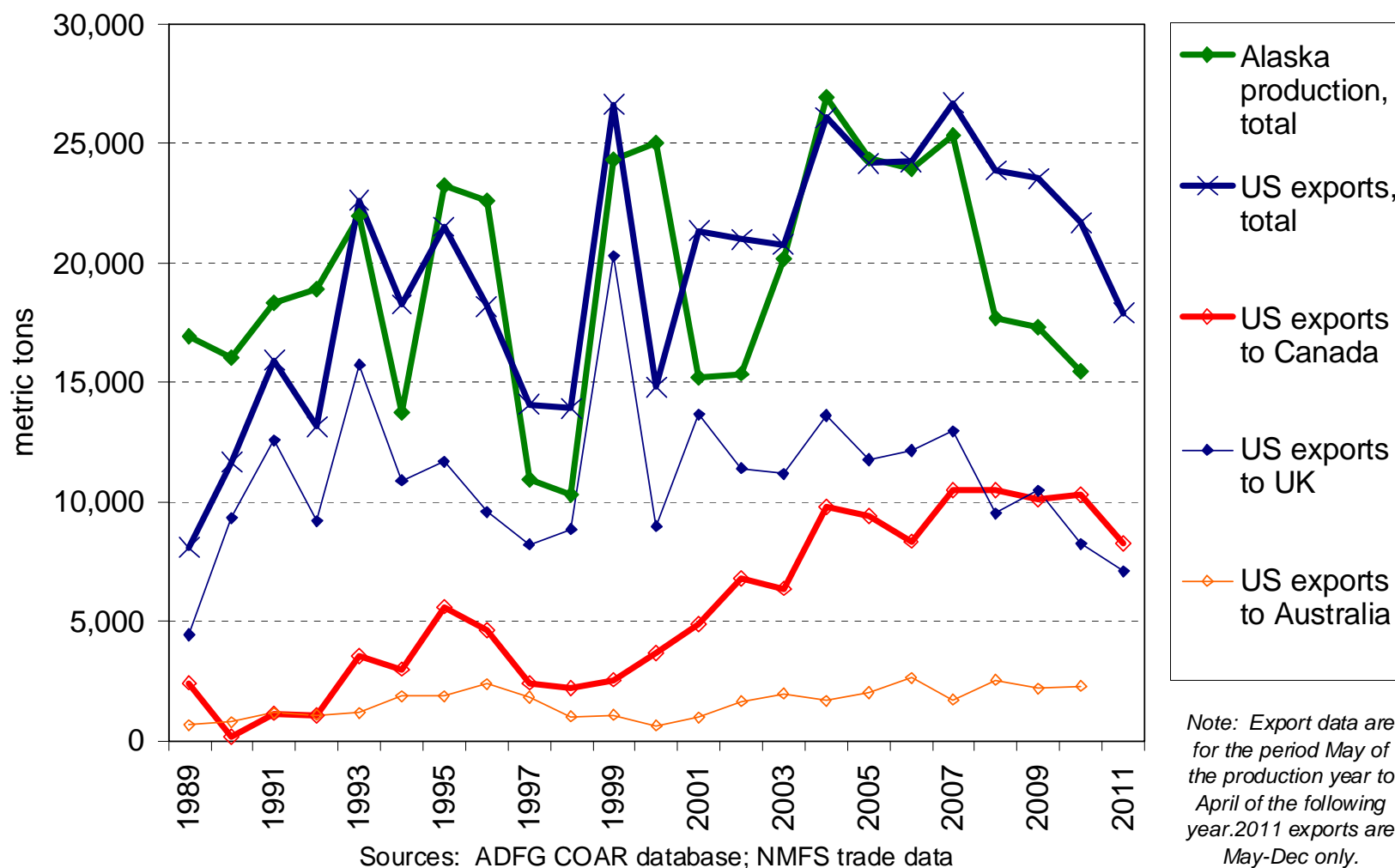
The largest end-market for canned pink salmon is the USA, followed by Canada, the UK and Australia. (According to industry sources, most canned pink “talls” are sold in the US market, while a larger share of canned pink “halves” are sold in export markets.)

Estimated End-Markets for Alaska Canned Pink Salmon



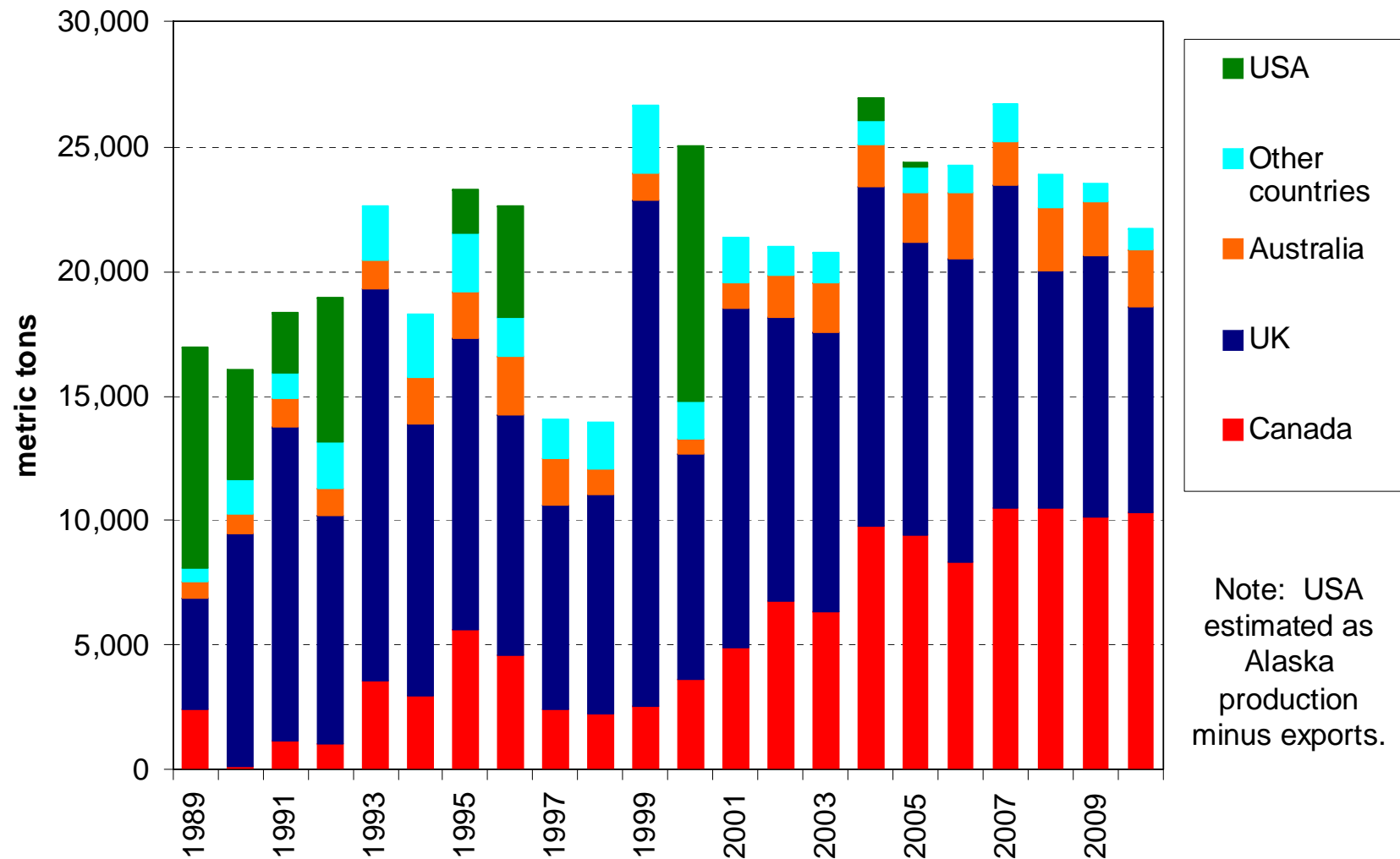
Estimating end markets for canned sockeye salmon is complicated by the fact that reported US exports have exceeded total Alaska production in some years. This probably is due, in part, to exports in some years of carryover inventories from previous years. In any case, it is clear that most canned sockeye salmon is exported. The most important export markets are Canada, the UK and Australia.

Alaska Production and US Exports: Canned Sockeye Salmon

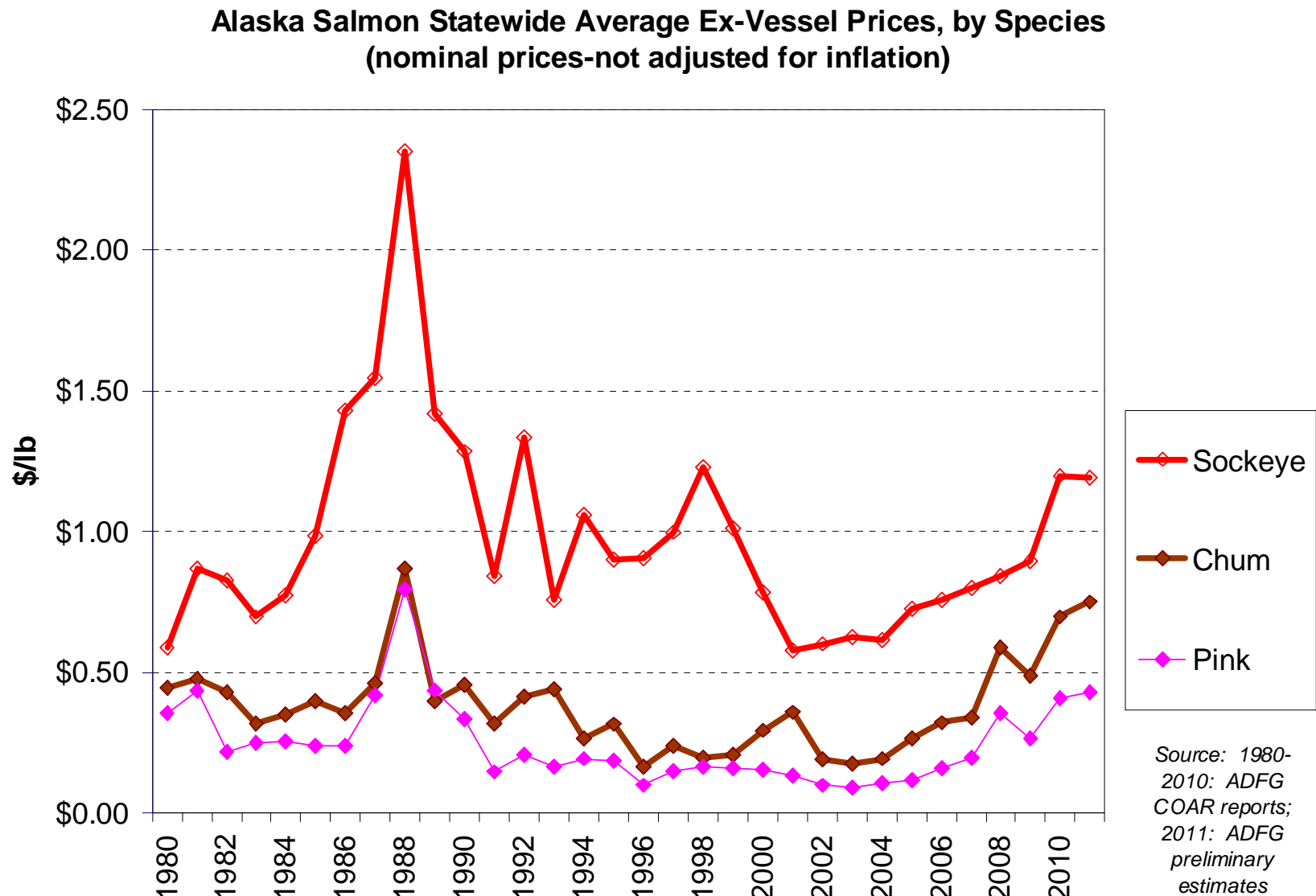


The share of canned sockeye salmon exported to Canada increased over the past decade. Note that the estimates for the USA are not reliable, given the problems associated with estimating US consumption as Alaska production minus exports, when exports in some years are partly carryover production from earlier years.

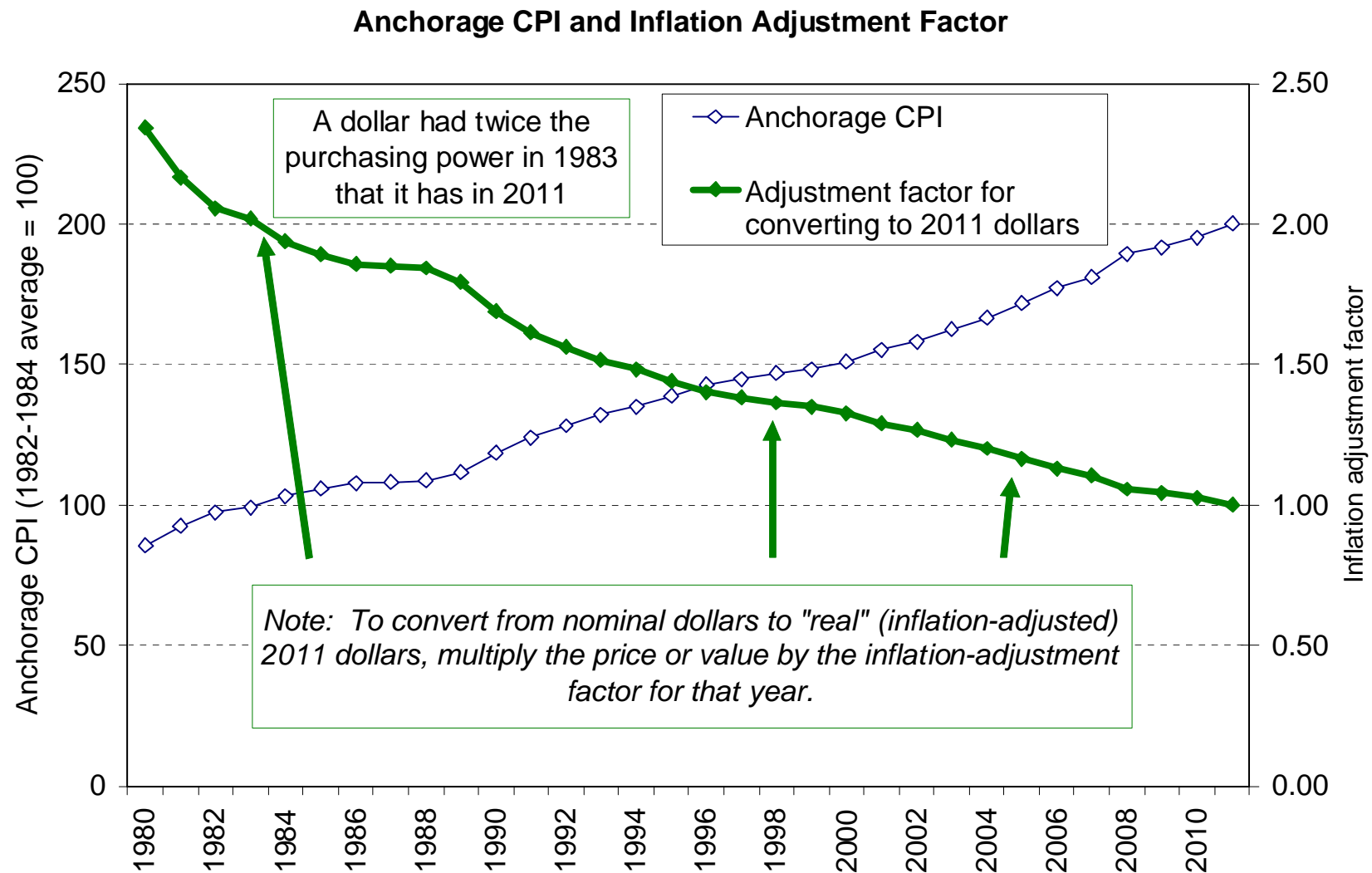
Estimated End-Markets for Alaska Canned Sockeye Salmon



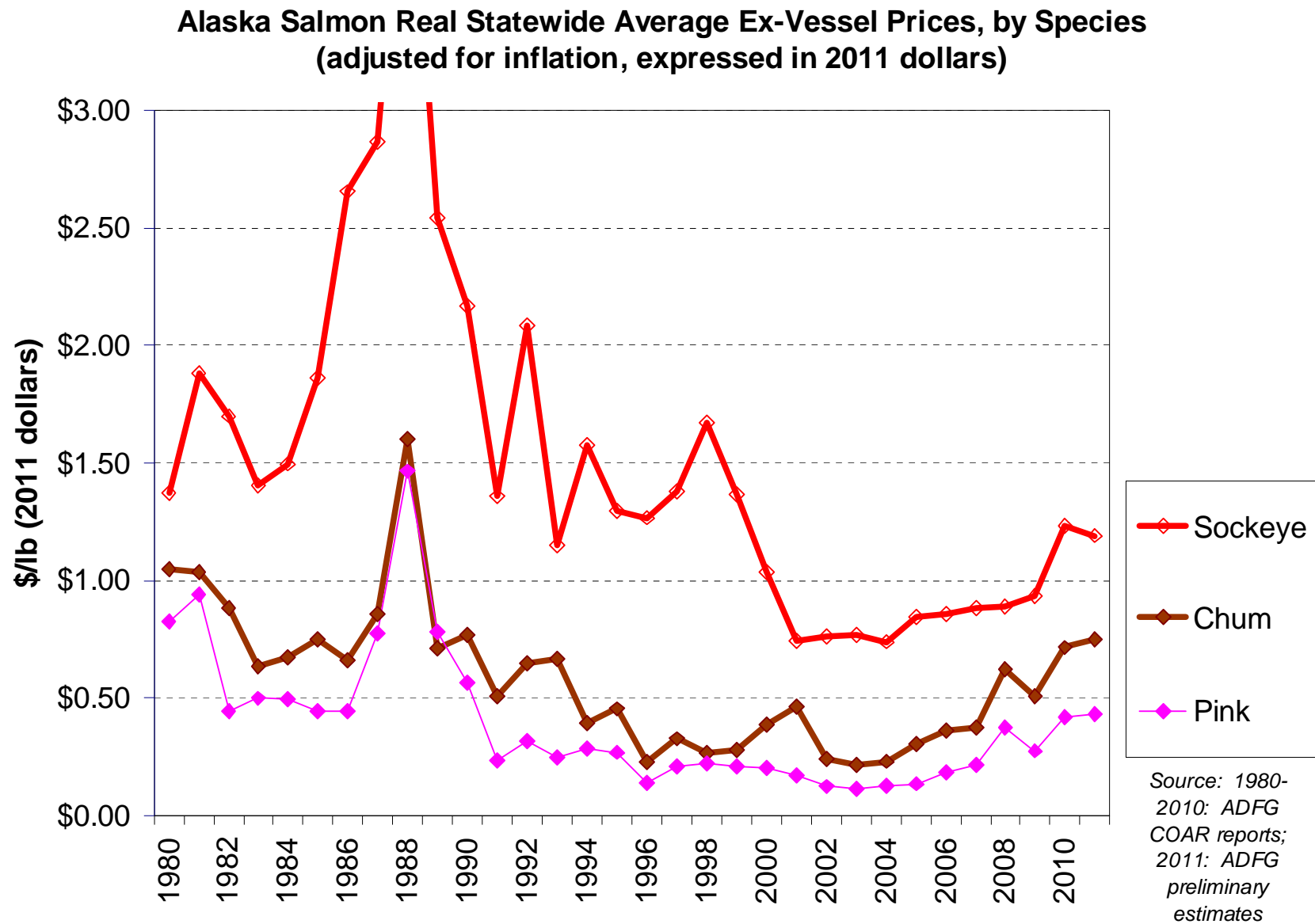
Ex-vessel prices for Alaska salmon fell drastically in 1990s but have rebounded dramatically since 2002. (Note that the ex-vessel prices for 2011 shown in the graph are preliminary ADF&G estimates; actual prices will probably be higher after taking account of post-season adjustments).



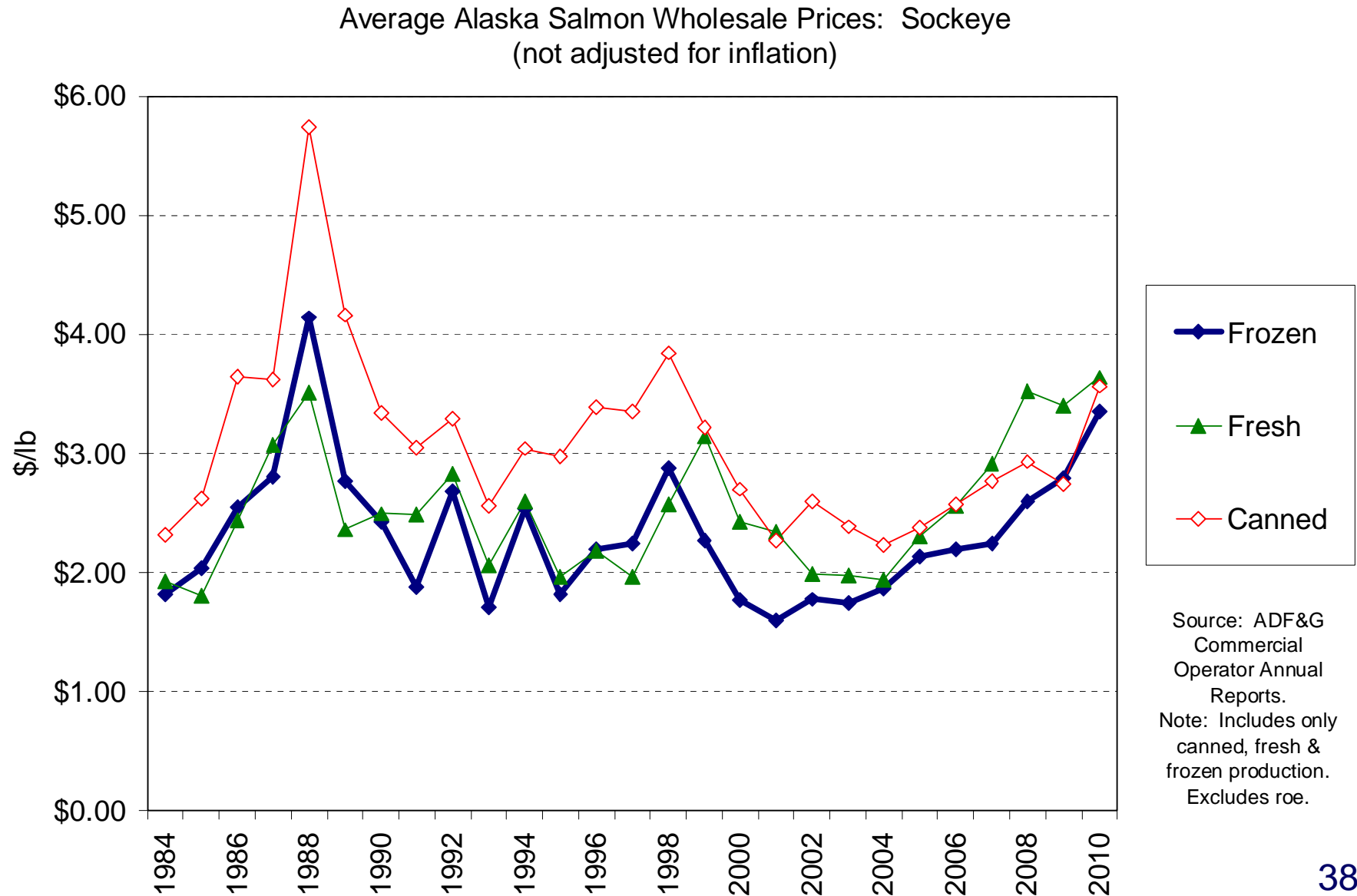
In comparing long-term price trends it's important to remember that there has been significant inflation since the 1980s.



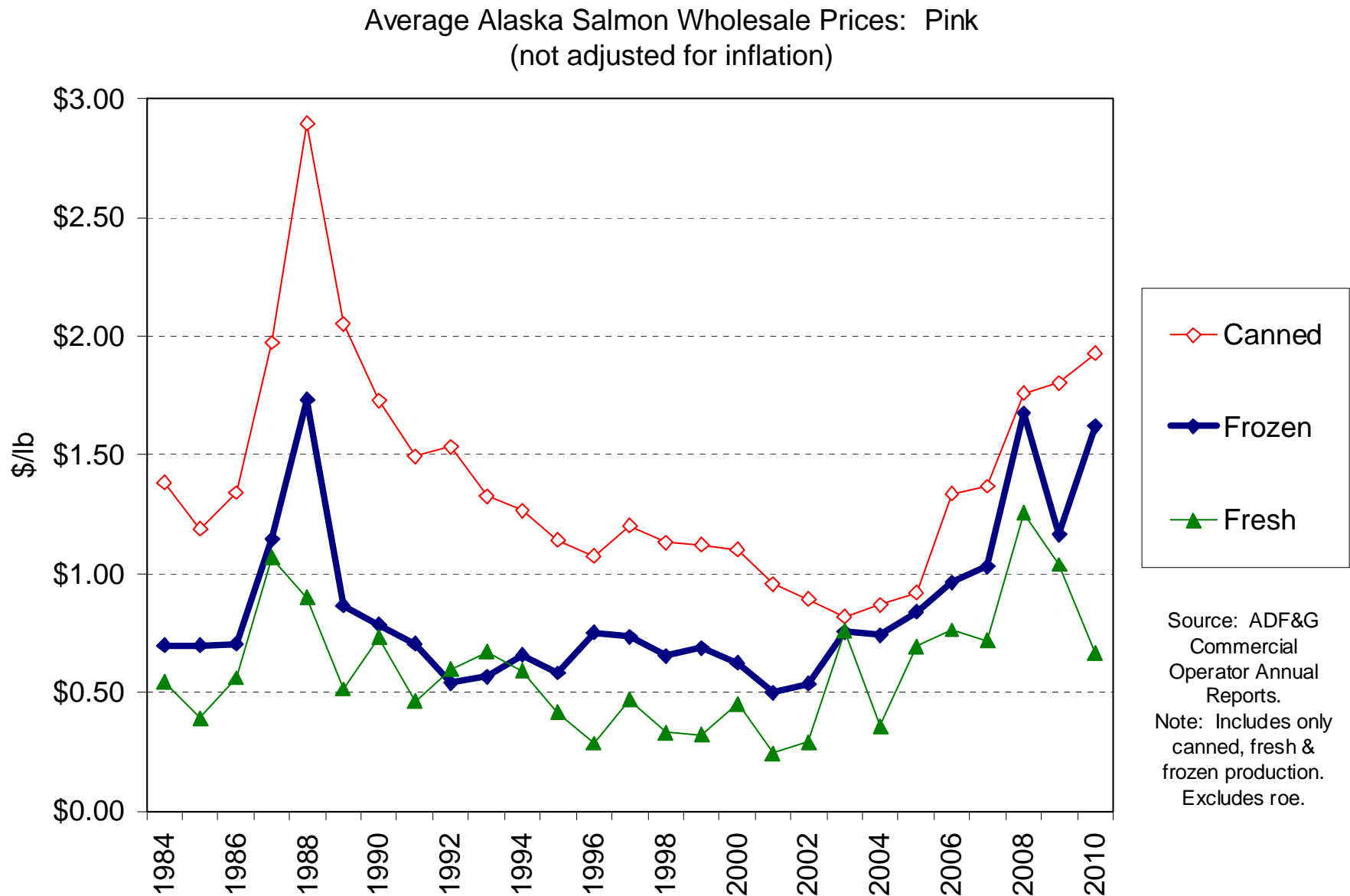
After adjusting for inflation, the rebound in ex-vessel prices since 2002 is still big but doesn't appear quite as dramatic.



Wholesale prices for frozen, canned and fresh sockeye salmon
have risen dramatically since the early 2000s.

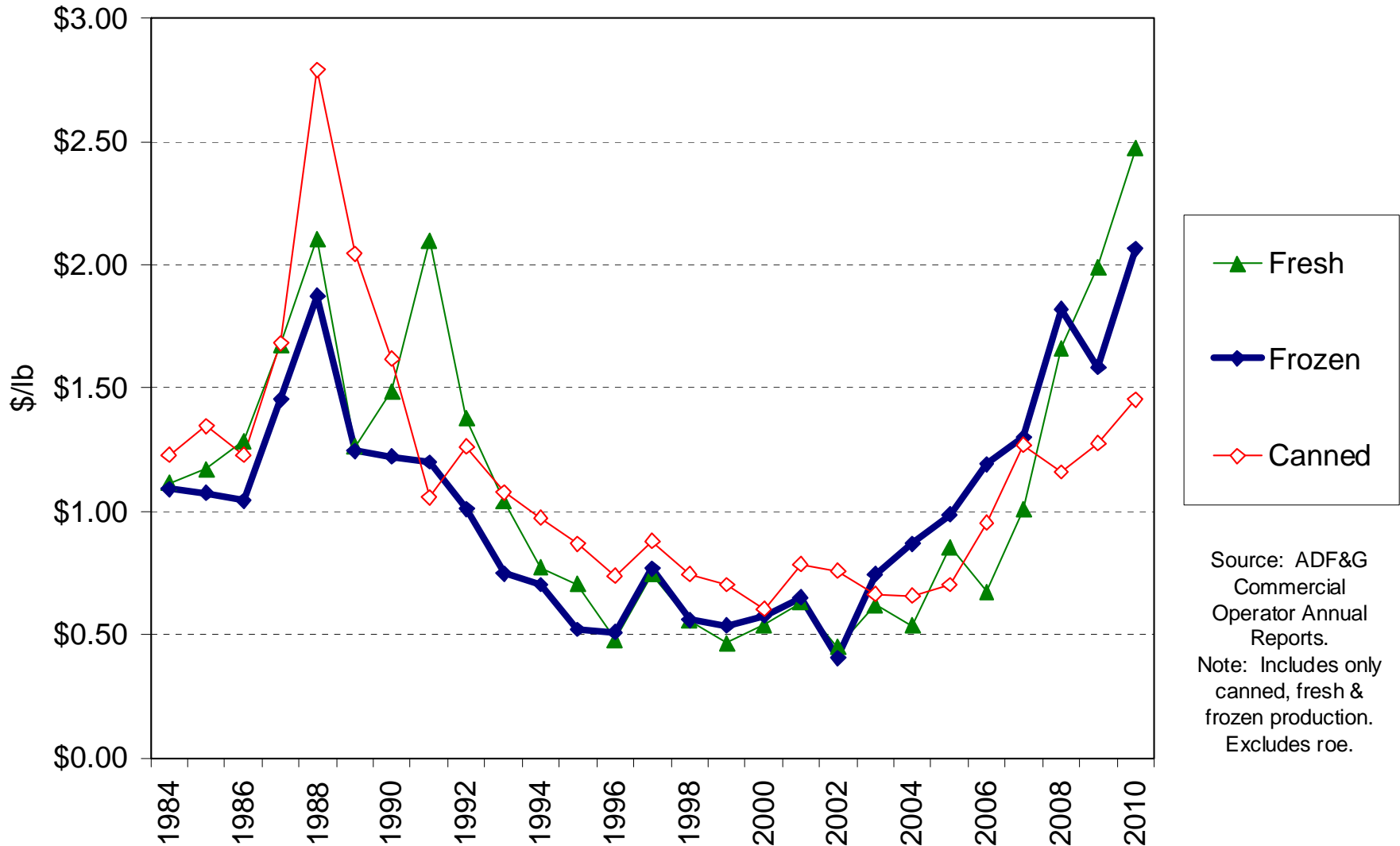


Wholesale prices for canned and frozen pink salmon have risen dramatically since the early 2000s.



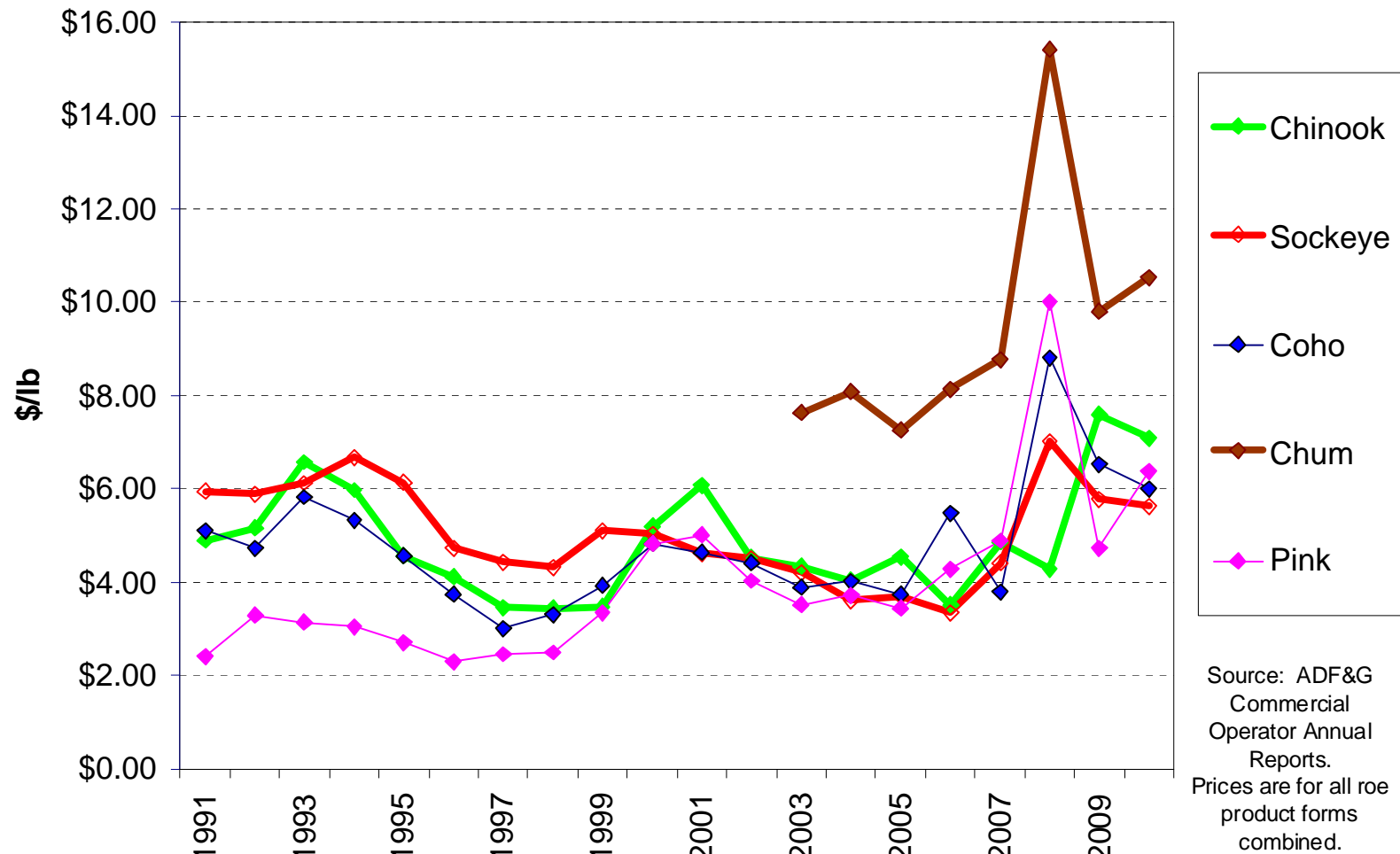
Wholesale prices for frozen, fresh and canned chum salmon
have risen dramatically since the early 2000s.

Average Alaska Salmon Wholesale Prices: Chum
(not adjusted for inflation)



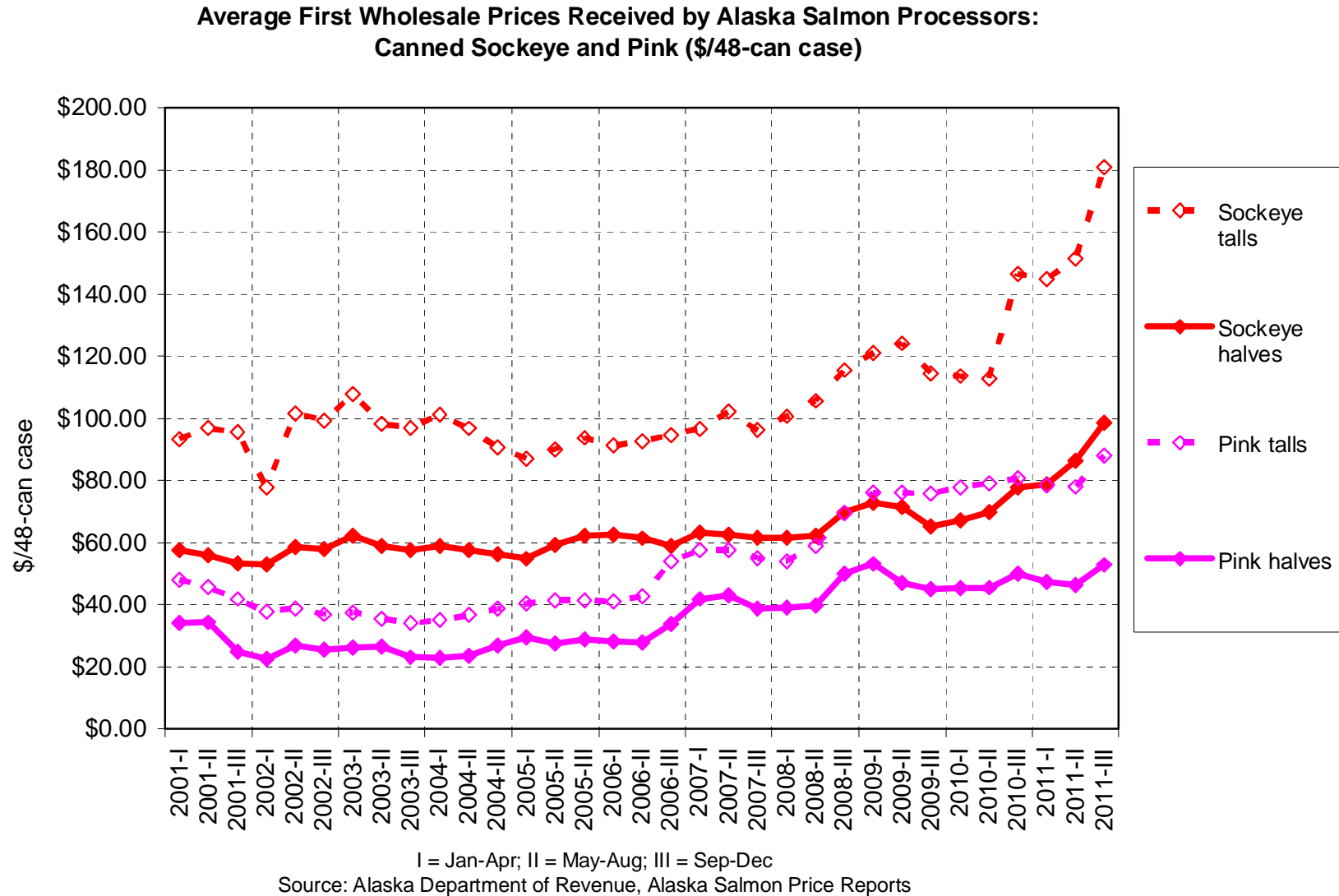
First wholesale prices for Alaska salmon roe exhibit very different trends than first wholesale prices of other products—reflecting the fact that roe is sold in very different end-markets and that wild salmon roe production faces little very competition from farmed salmon. Roe prices spiked in 2008 but have otherwise not increased as dramatically as canned, frozen and fresh prices. Note that chum roe first wholesale prices are much higher than for other species. Roe accounts for a major share of chum salmon total first wholesale value.

Alaska Salmon Roe First Wholesale Prices, by Species
(nominal prices-not adjusted for inflation)



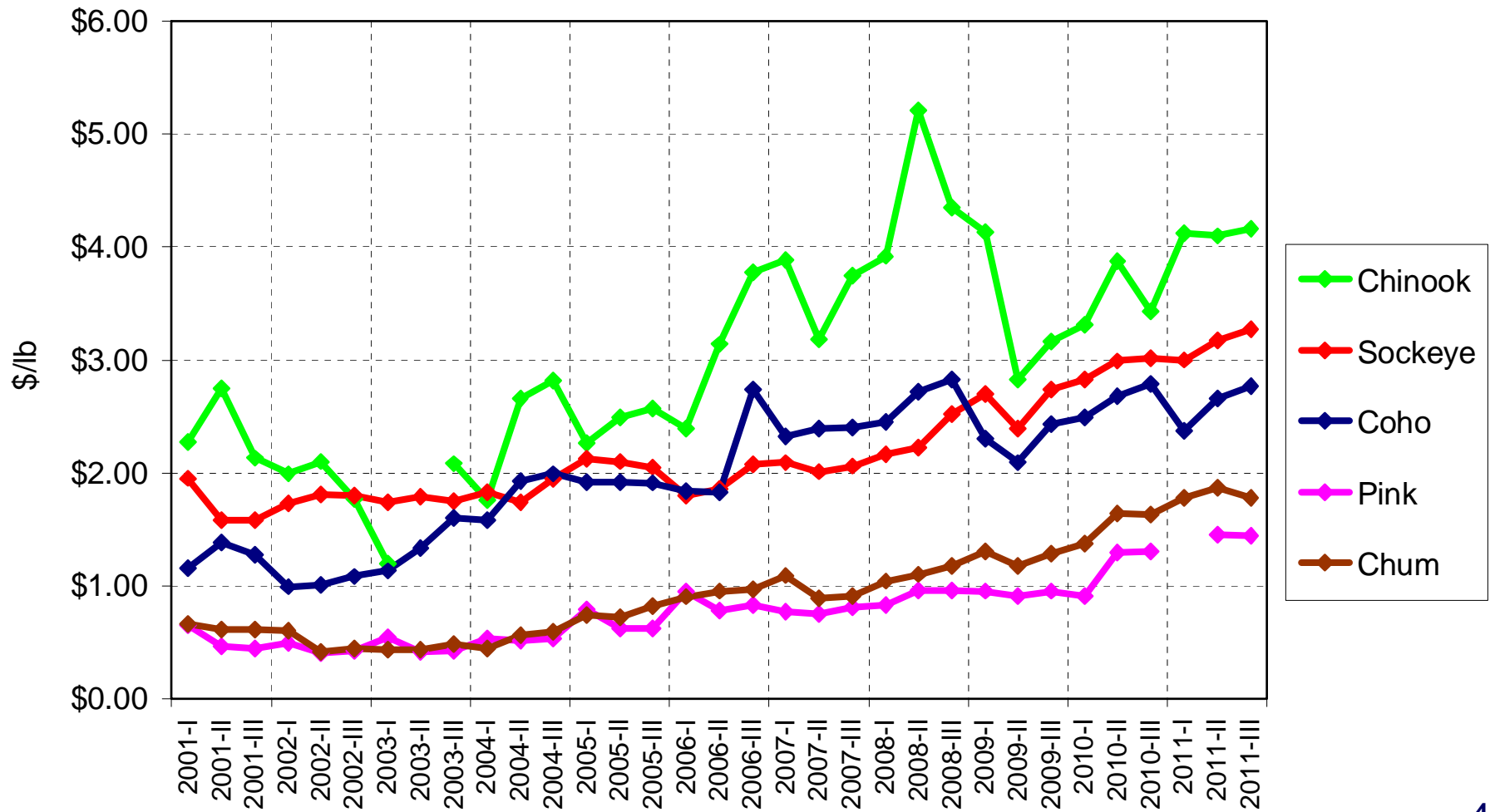
The next five graphs show the dramatic increase in Alaska salmon wholesale prices over the past decade based on Alaska Department of Revenue salmon price reports.

Canned salmon prices have risen dramatically for both talls and halves.



Frozen headed and gutted (H&G) prices have risen dramatically for all species.

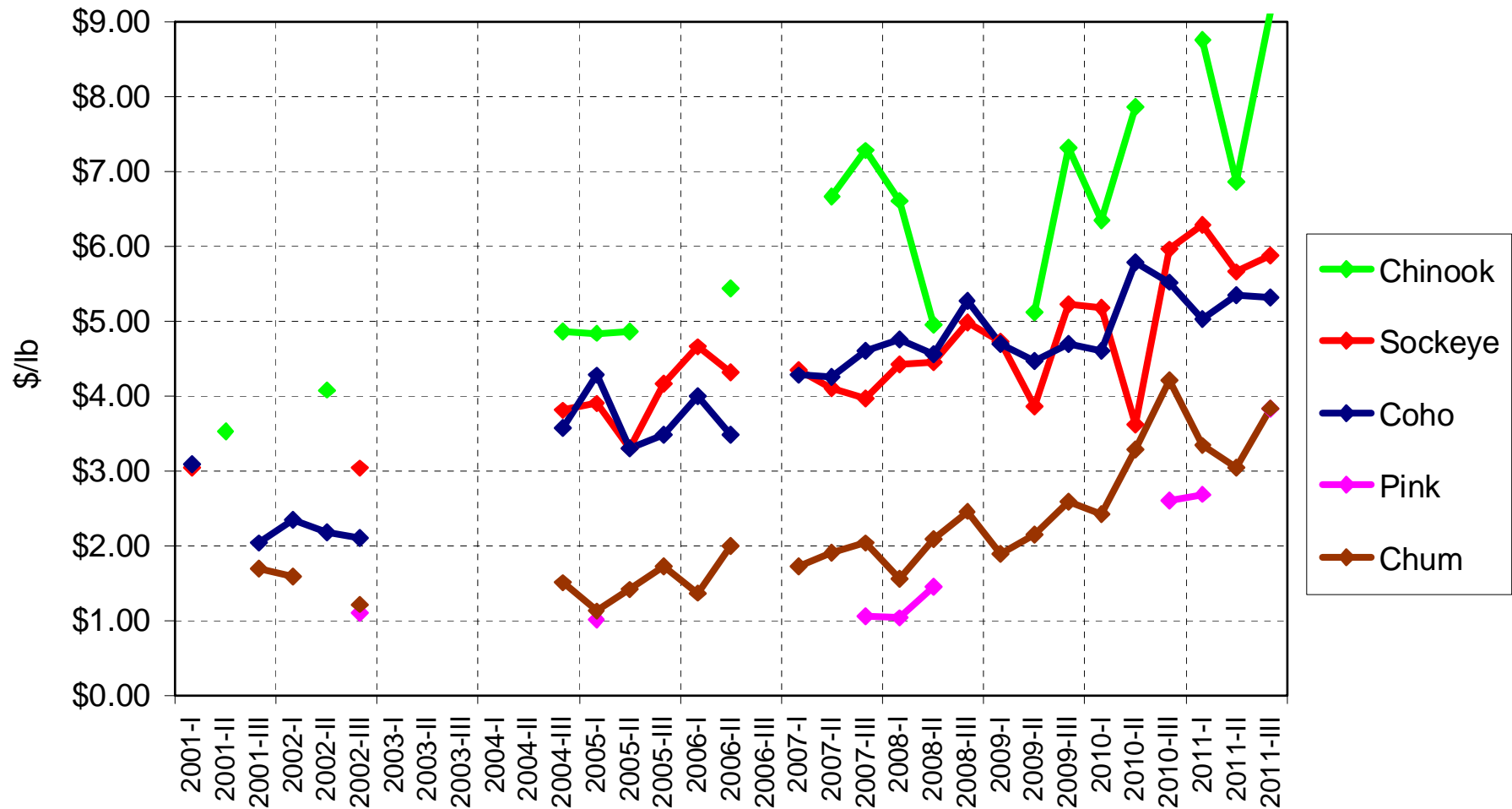
Average First Wholesale Prices Received by Alaska Salmon Processors:
Frozen H&G



I = Jan-Apr; II = May-Aug; III = Sep-Dec; Source: Alaska Department of Revenue, Alaska Salmon Price Report

Frozen fillet prices have risen dramatically for all species.

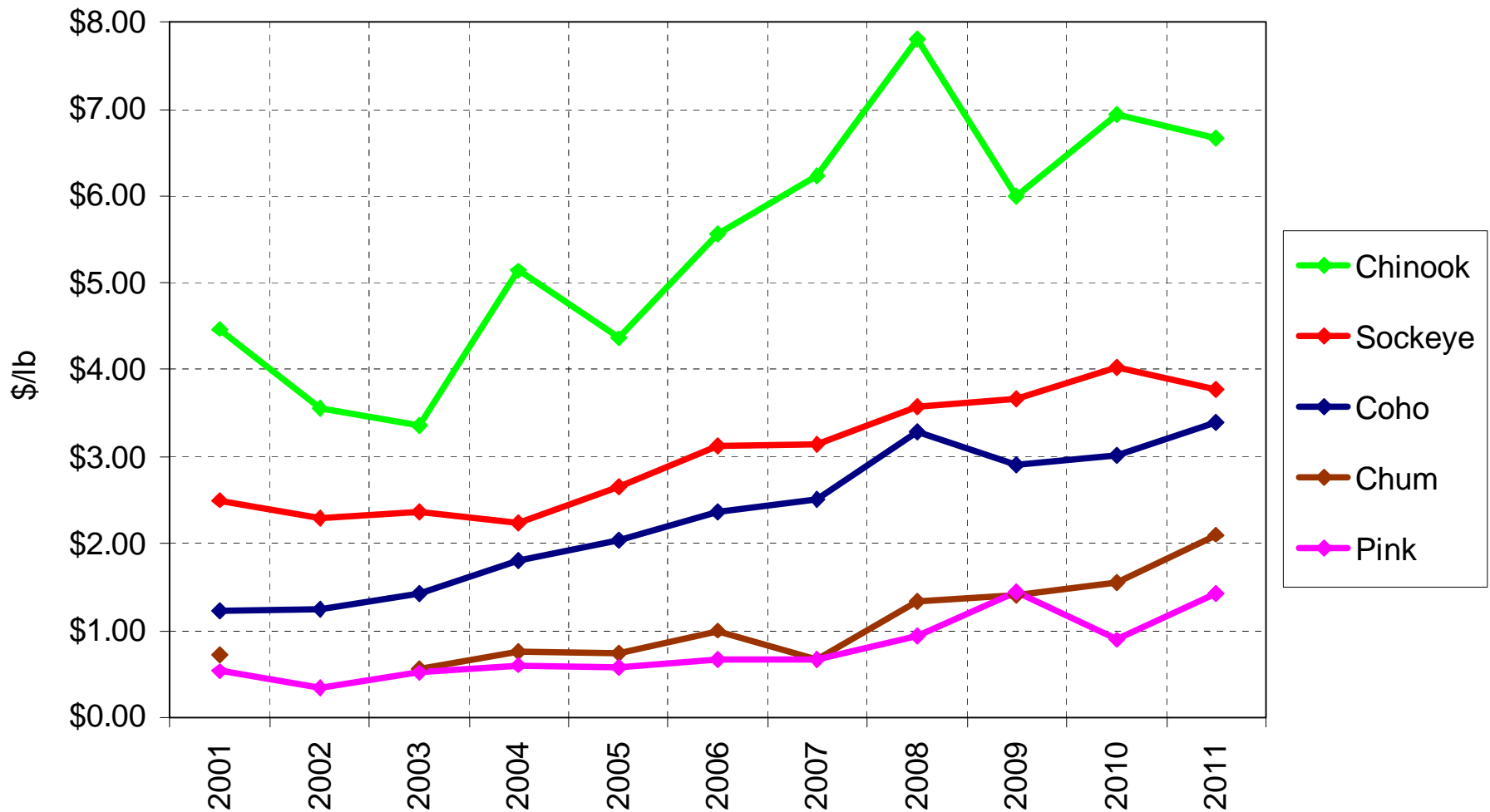
Average First Wholesale Prices Received by Alaska Salmon Processors:
Frozen Fillets



I = Jan-Apr; II = May-Aug; III = Sep-Dec; Source: Alaska Department of Revenue, Alaska Salmon Price Report

Fresh headed and gutted (H&G) prices have risen dramatically for all species.

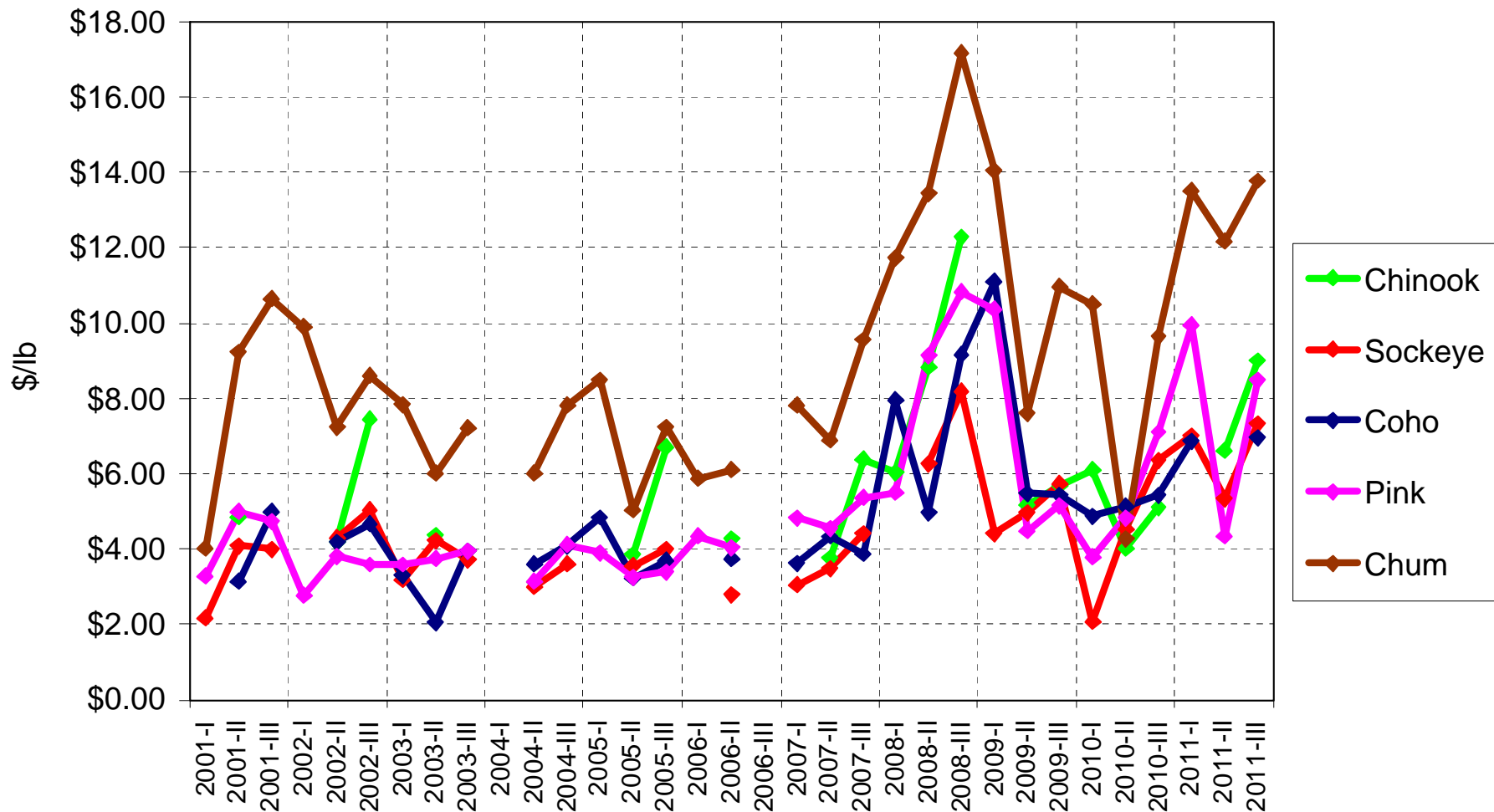
Average First Wholesale Prices Received by Alaska Salmon Processors,
May-August: Fresh H&G



Source: Alaska Department of Revenue, Alaska Salmon Price Reports

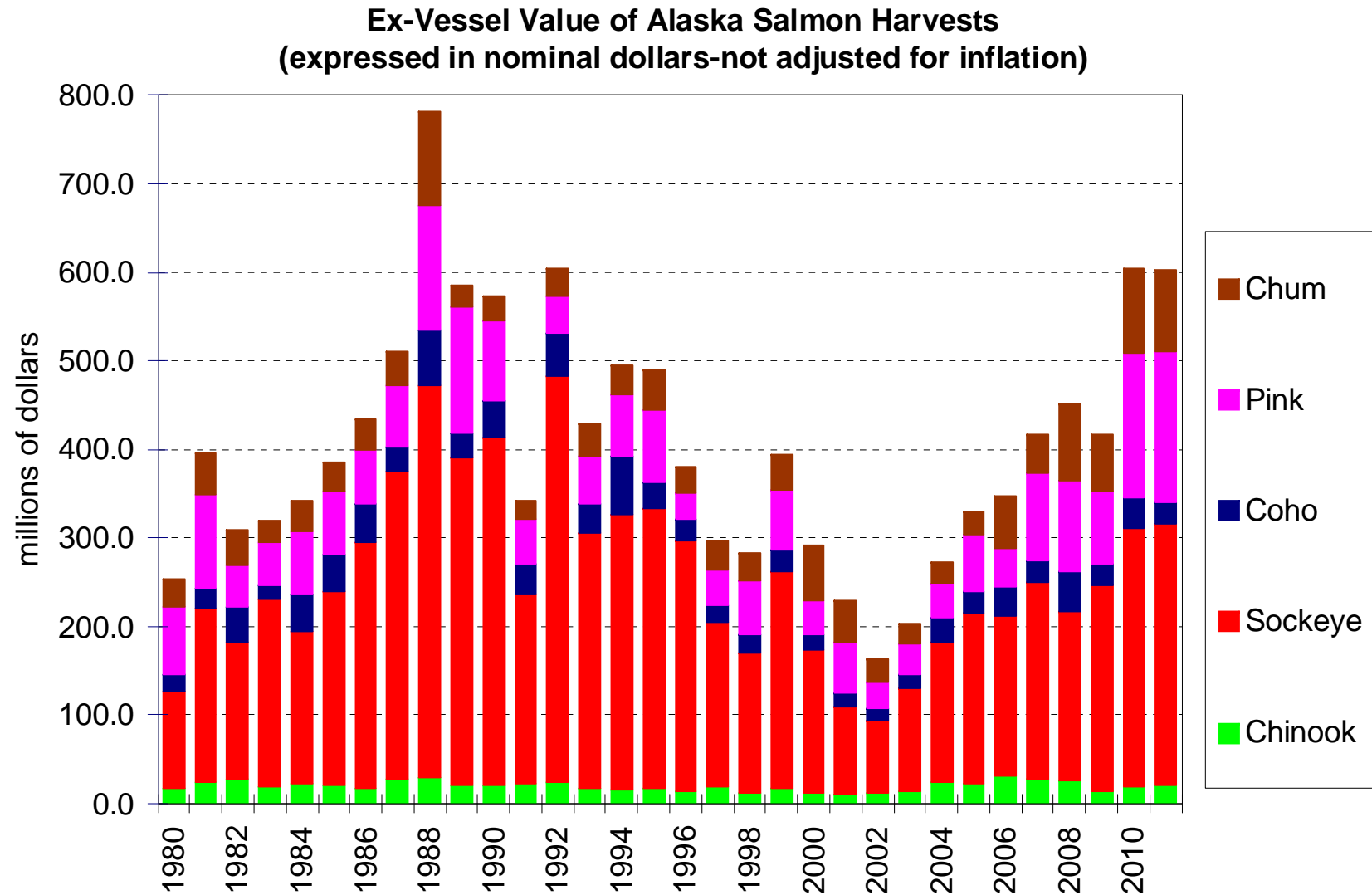
The Department of Revenue data also show that Alaska salmon roe exhibit very different wholesale price trends than for other products. Note that roe prices spiked in 2008 and 2011, and that chum roe wholesale prices are much higher than for other species.

Average First Wholesale Prices Received by Alaska Salmon Processors:
Roe

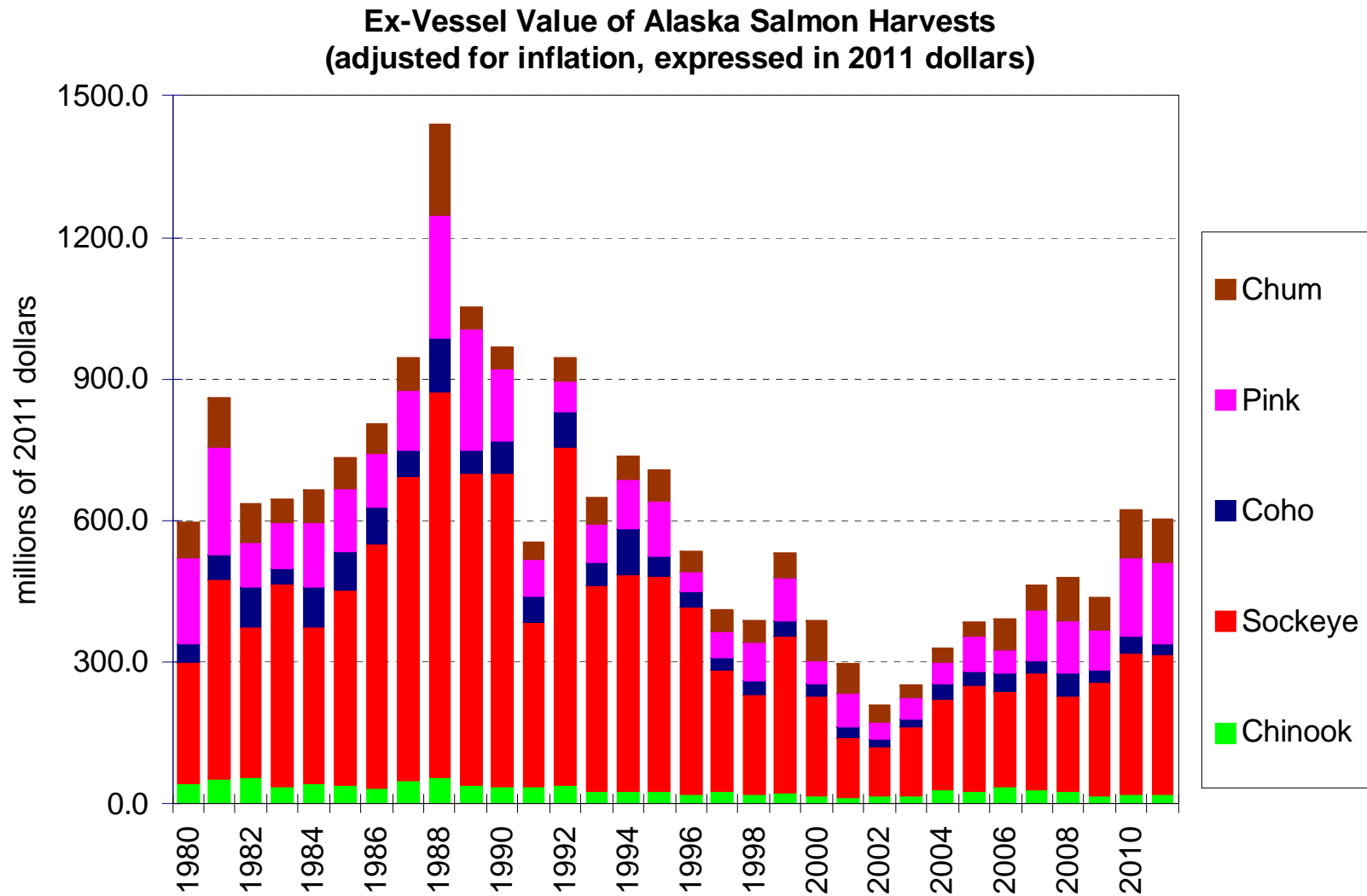


I = Jan-Apr; II = May-Aug; III = Sep-Dec; Source: Alaska Department of Revenue, Alaska Salmon Price Report

The combined result of strong harvests and a dramatic recovery in prices has been a dramatic recovery in the ex-vessel value of Alaska salmon harvests, from \$164 million in 2002 to \$603 million in 2010.

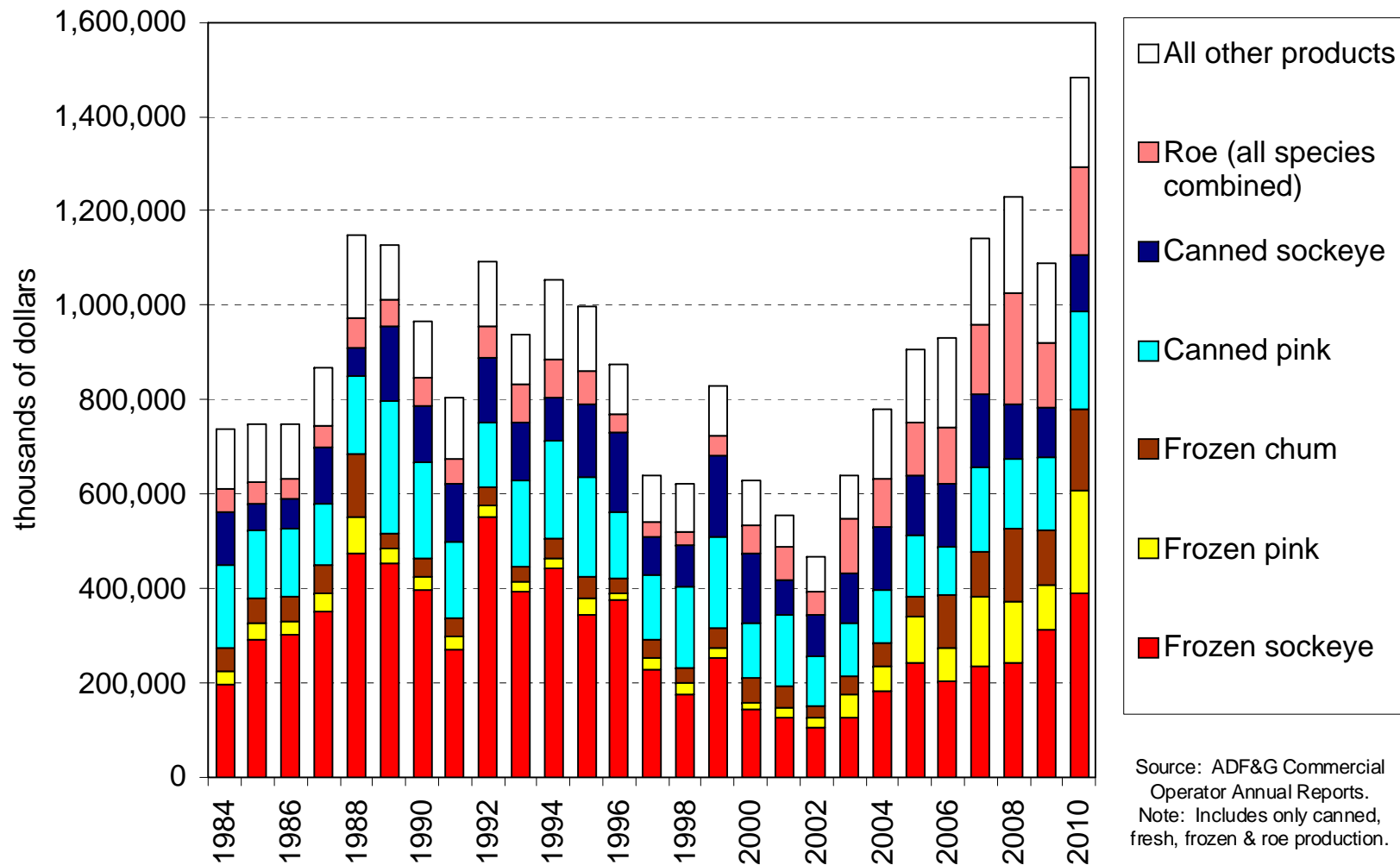


After adjusting for inflation the recovery in ex-vessel value doesn't appear quite as dramatic—although it is still dramatic and important. Although ex-vessel value has rebounded strongly, it is still well below the inflation-adjusted levels of much of the 1980s.



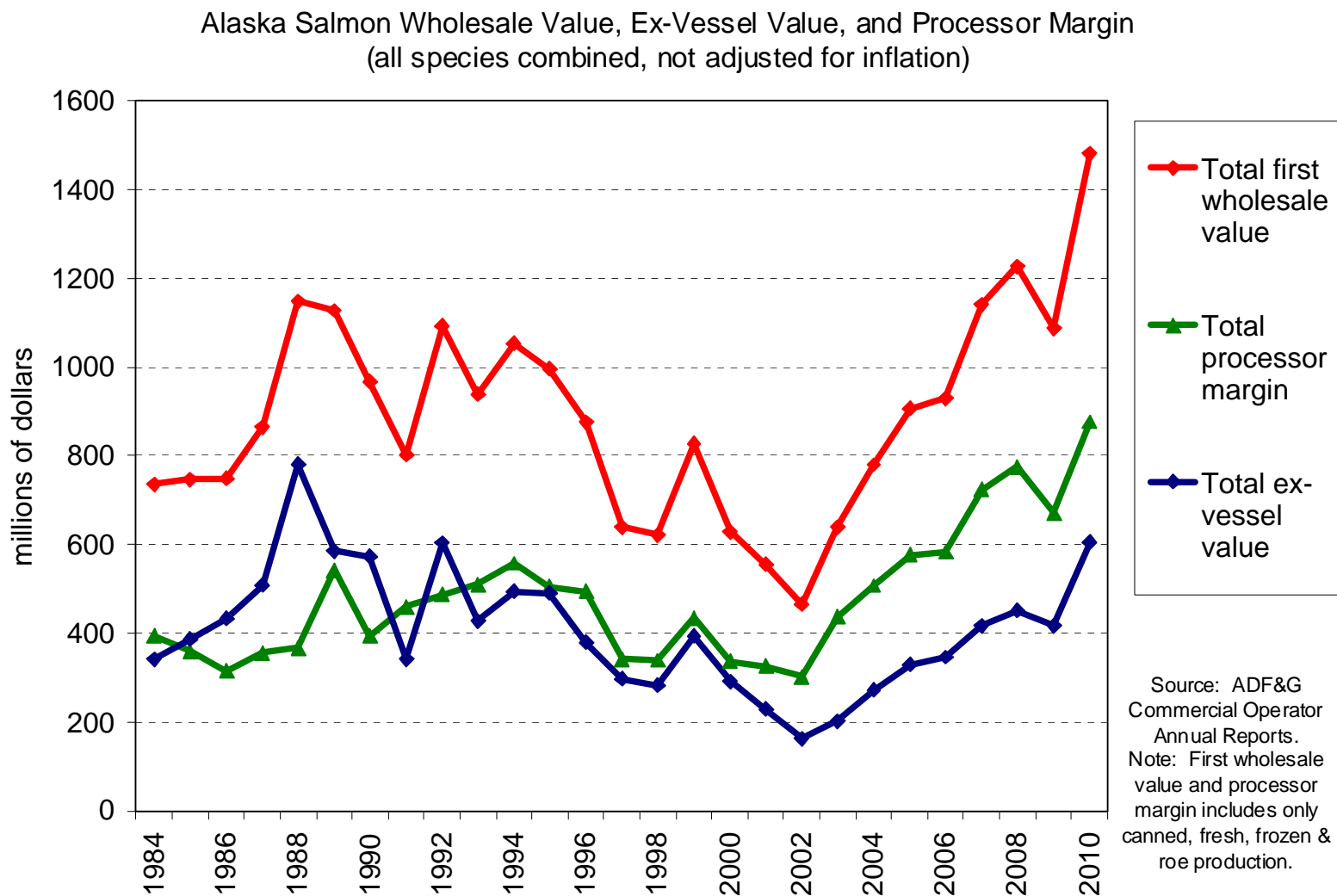
There has been a dramatic increase in the total wholesale value of Alaska production since the early 2000s, from \$466 million in 2002 to \$1.5 billion in 2010. The increase in wholesale value was driven primarily by higher wholesale prices, as well as increased harvests and production of sockeye salmon. Note that salmon roe also represents an important component of total wholesale value.

First Wholesale Value of Alaska Salmon Production, by Product



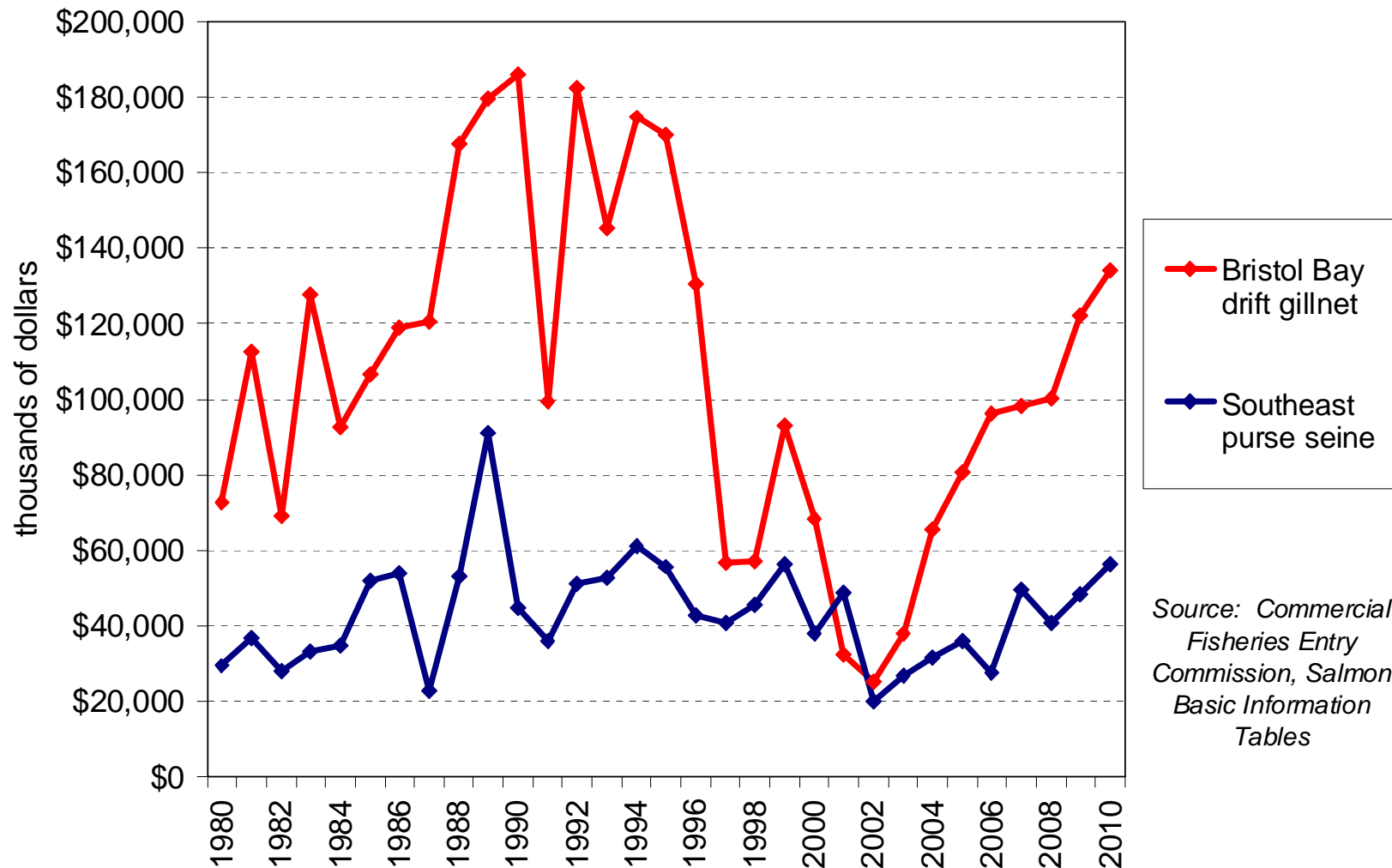
Both fishermen and processors have shared in the increase in salmon wholesale prices and value since the early 2000s.

“Processor margin” is my term for the wholesale value of processors’ sales minus the ex-vessel value they pay fishermen. Since the early 2000s, both total processor margin and total ex-vessel value have risen by similar amounts.

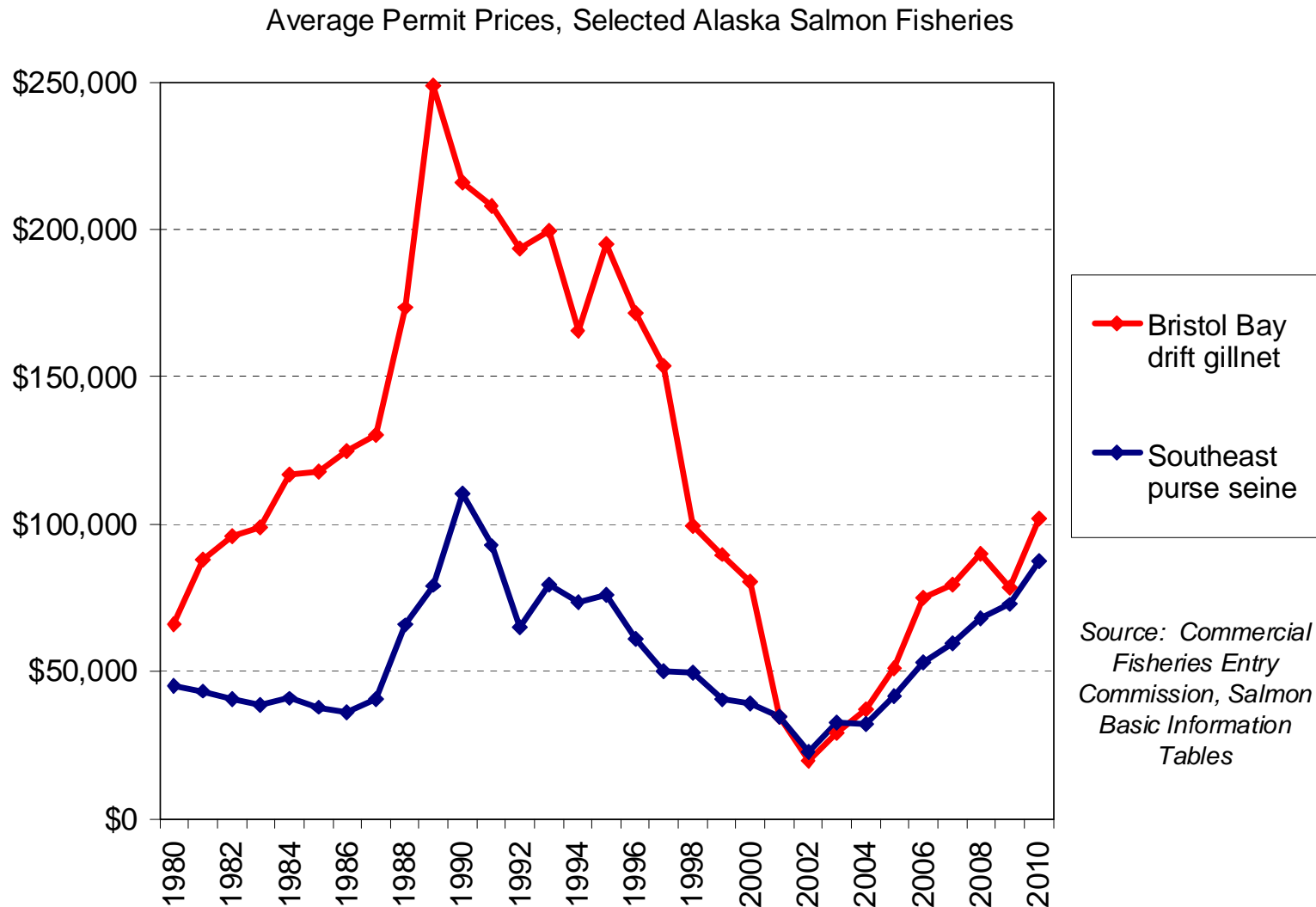


There are twenty-seven different limited entry salmon fisheries in Alaska. The trends in ex-vessel value (which is the same as total earnings) differs by fishery, reflecting the species mix caught in the fishery and local run conditions. However, in general almost all fisheries experienced a significant decline in value during the 1990s and a significant recovery since 2002. This graph shows trends in total earnings in two of Alaska's most valuable salmon fisheries: the Bristol Bay drift gillnet fishery and the Southeast purse seine fishery.

Total Earnings, Selected Alaska Salmon Fisheries



Permit prices in Alaska salmon fisheries tend to reflect trends in earnings. In many fisheries, permit prices fell drastically when total earnings fell in the 1990s, and have recovered dramatically since 2002 as total earnings have risen. The increase in permit prices since 2002 shows that Alaska salmon fishermen have become increasingly optimistic about the future prospects of Alaska salmon fisheries.



2. What explains the dramatic recovery in Alaska salmon prices over the past decade?

- Prices for Alaska salmon recovered dramatically over the past decade.
- What caused the recovery in prices?
- It is important to have a clear understanding of what has been driving prices in order to think clearly about how prices may change in the future.

The Alaska salmon industry has done many things
which contributed to the price recovery.

- Sustained effective marketing
- Effective niche marketing
- Development of new markets
- New product forms
- Improved quality

Sustained effective marketing . . .



It's a known fact that if you grow up in Alaska
you'll be stronger, healthier and better looking.
(especially if you're a salmon)

Two young boys are standing on the deck of a fishing boat, holding large salmon. The boy on the left is wearing an orange hooded raincoat and a blue shirt, while the boy on the right is wearing a yellow raincoat. They are both smiling and looking at the camera. The background shows the deck of the boat and some fishing equipment.


Alaska Salmon
Naturally a World Apart

In Alaska's pure, icy waters, salmon naturally develop firmer meat that's rich in Omega-3 oils, great tasting, and much more attractive to your customer. For easy menuing and merchandising ideas with Alaska Salmon, call: 1-800-806-2497 or visit our web site: www.alaskaseafood.org.

Effective niche marketing . . .

V4 THE WASHINGTON POST

The Salmon's Sky-High This Year

By WALTER NICHOLLS
Washington Post Staff Writer

Washingtonians who wait all year for wild Copper River king salmon from Alaska are paying for the privilege — assuming they can even find the prized fish in stores or restaurants.

Specialty fish markets are charging \$5 more per pound than they did last year. At M. Slavin & Sons in Arlington, Copper River king salmon is selling for \$28.95 per pound; at River Falls Seafood in Potomac, it's \$29.99 per pound, up from \$24.99 per pound last year. For the time being, supermarkets are carrying the less expensive sockeye variety.

At Oceanaire Seafood Room downtown, an entree of the rich, oily Copper River fish is \$53.95, up from \$32 five years ago. "We're just



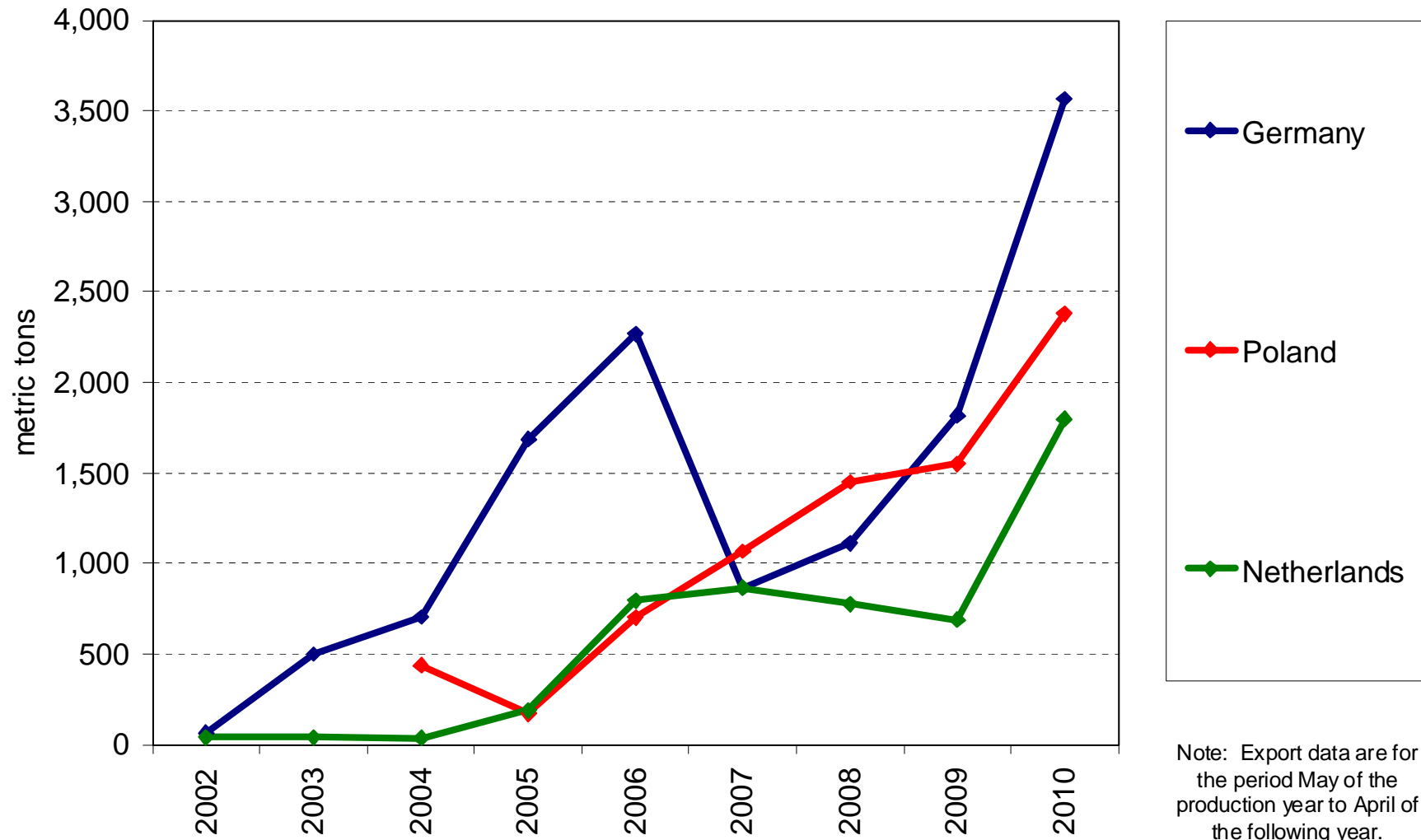
BY PAUL JOSEPH BROWN — SEATTLE POST-INTELLIGENCER VIA ASSOCIATED PRESS

The first shipment of Copper River salmon (a 45-pounder) gets red-carpet treatment from Alaska Airlines cargo manager Matt Yerbic, center, at the Seattle-Tacoma International Airport.

Washington Post, May 31, 2006

Development of new markets . . .

Alaska Frozen Sockeye Exports to Selected European Countries, 2002-2010



Source: NMFS trade data

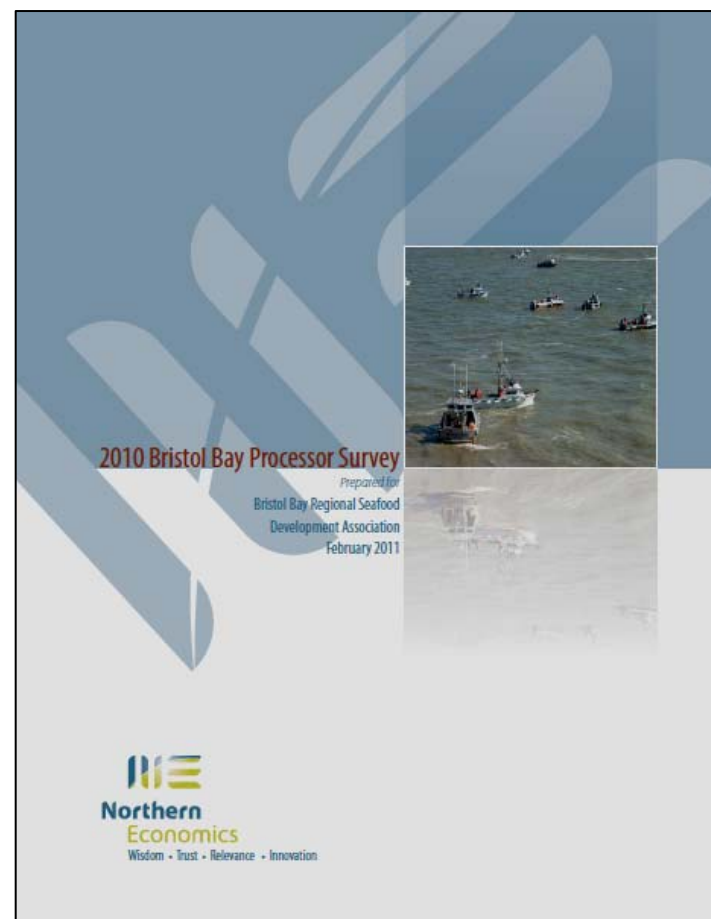
Note: Export data are for the period May of the production year to April of the following year.

New product forms . . .



Wild sockeye fillet

Improved quality . . .



Drift Fleet Raw Product Purchases, 2008-2010

Product	2008		2009		2010	
	Round Pounds	Percent of Total	Round Pounds	Percent of Total	Round Pounds	Percent of Total
Chilled	32.5	24%	60.0	40%	63.4	47%
Unchilled	102.2	76%	91.7	60%	72.6	53%
Total	134.7	100%	151.7	100%	136.0	100%

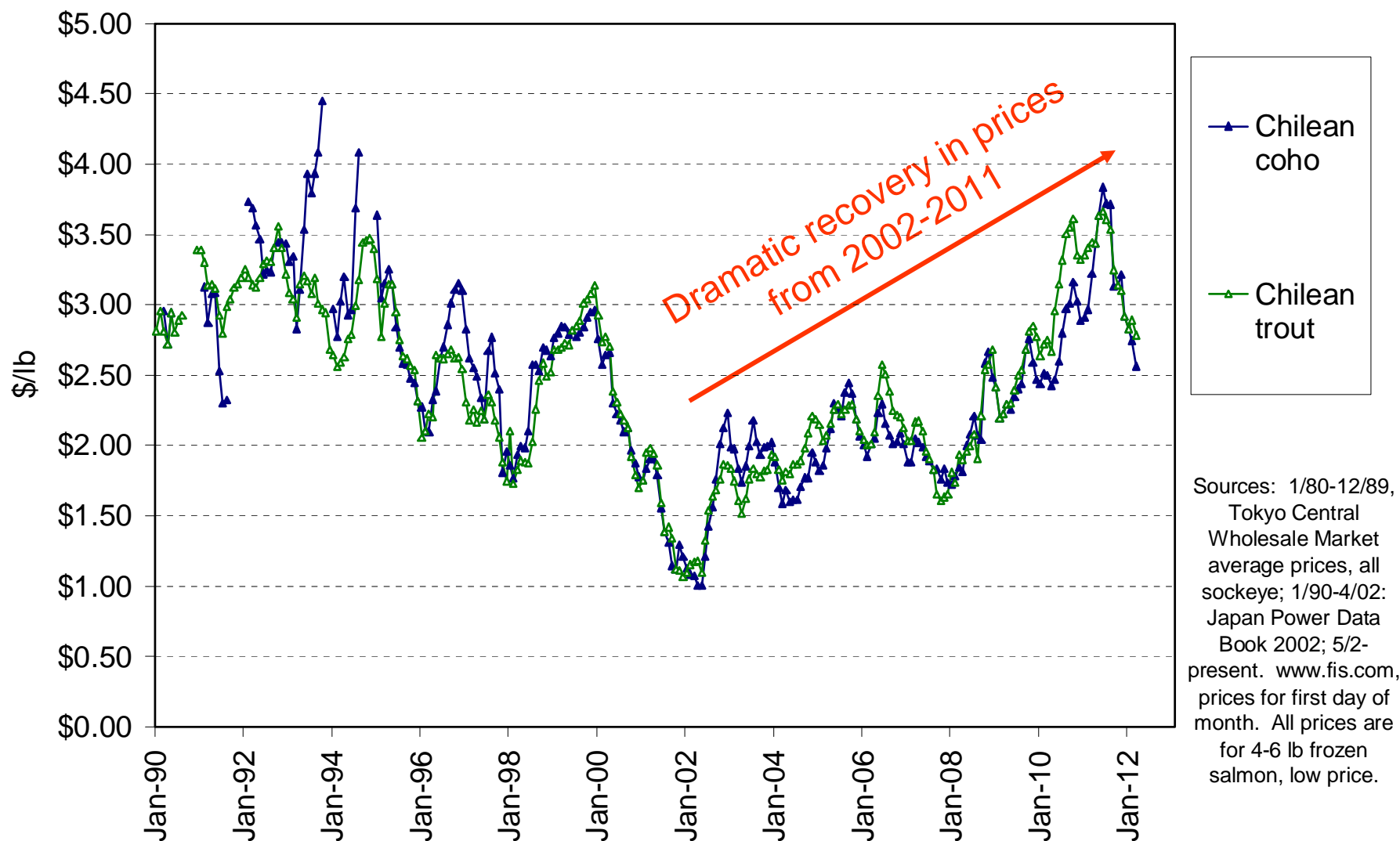
Source: Northern Economics, Inc. 2010

But other factors also contributed to the price recovery over the past decade which we had nothing to do with and which are beyond our control.

- All world salmon markets strengthened dramatically over the past decade.
 - Not just wild: both farmed and wild
 - Farmed salmon prices also increased dramatically from 2002-2011
- Stronger currencies in major Alaska export markets

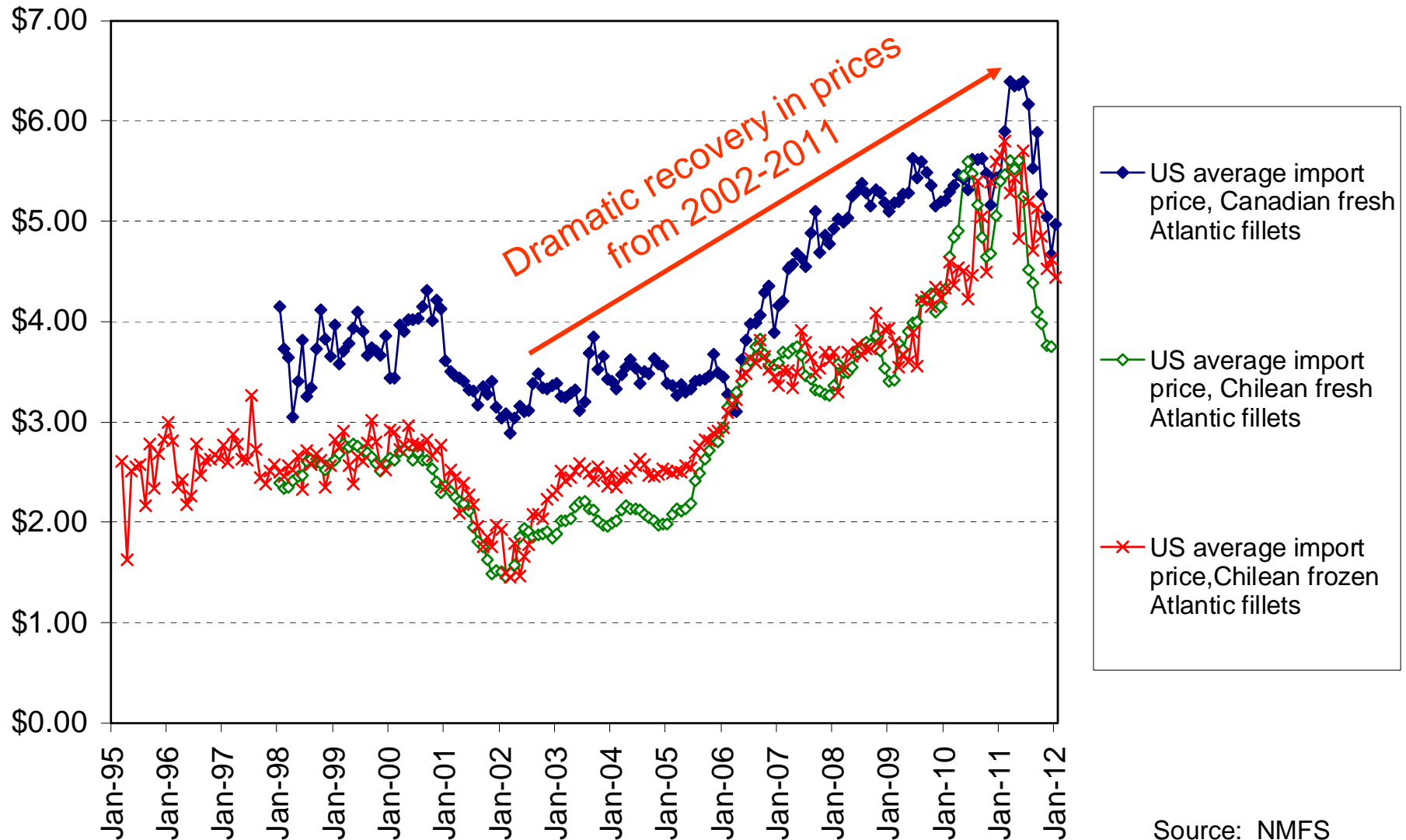
Japanese wholesale prices for farmed coho & trout . . .

Japanese Wholesale Prices for Frozen Farmed Coho & Trout (\$/lb)



U.S. import prices for farmed Atlantic salmon . . .

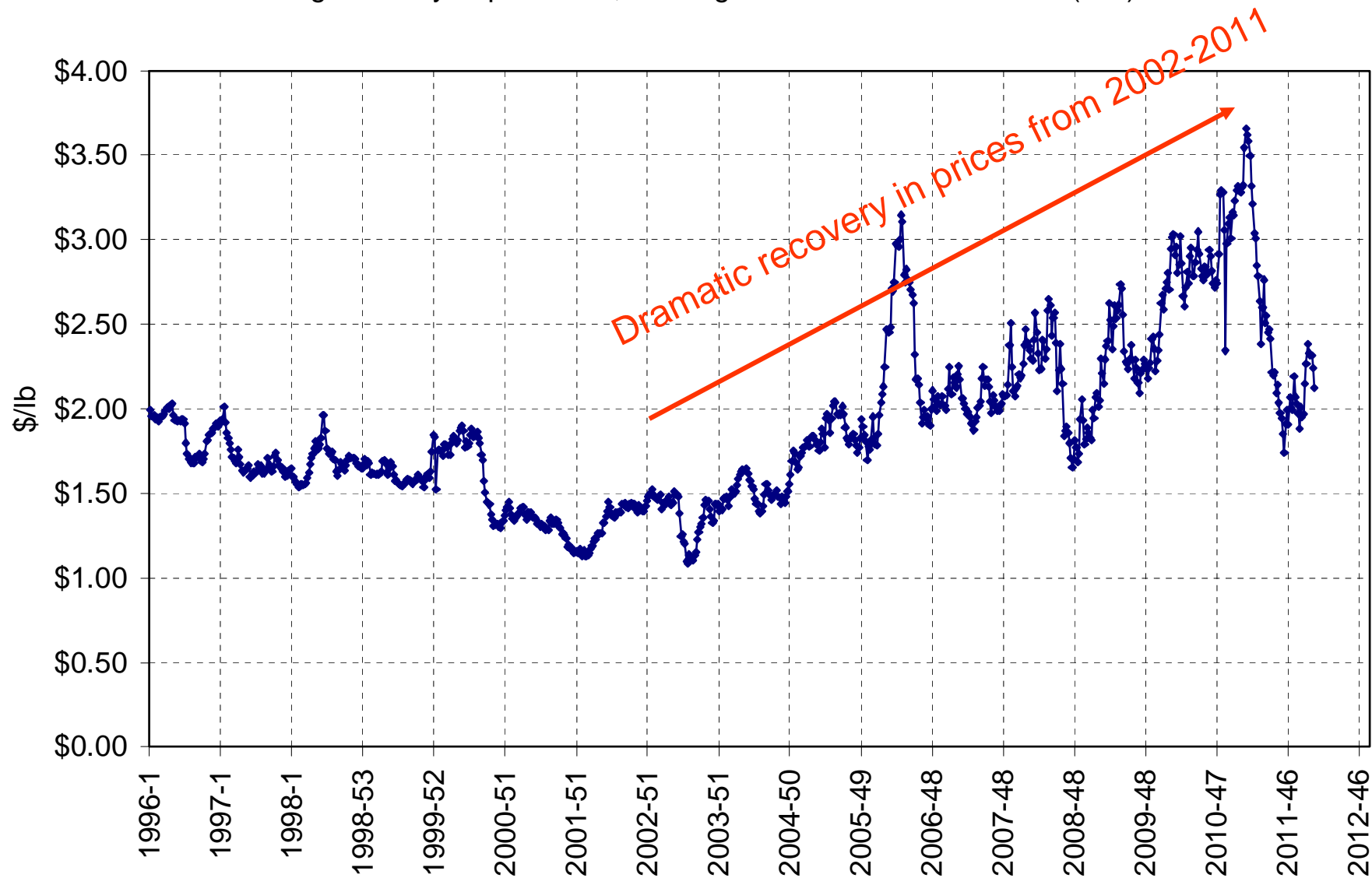
Average United States Import Prices of Selected Farmed Salmon Products(\$/lb)



Source: NMFS

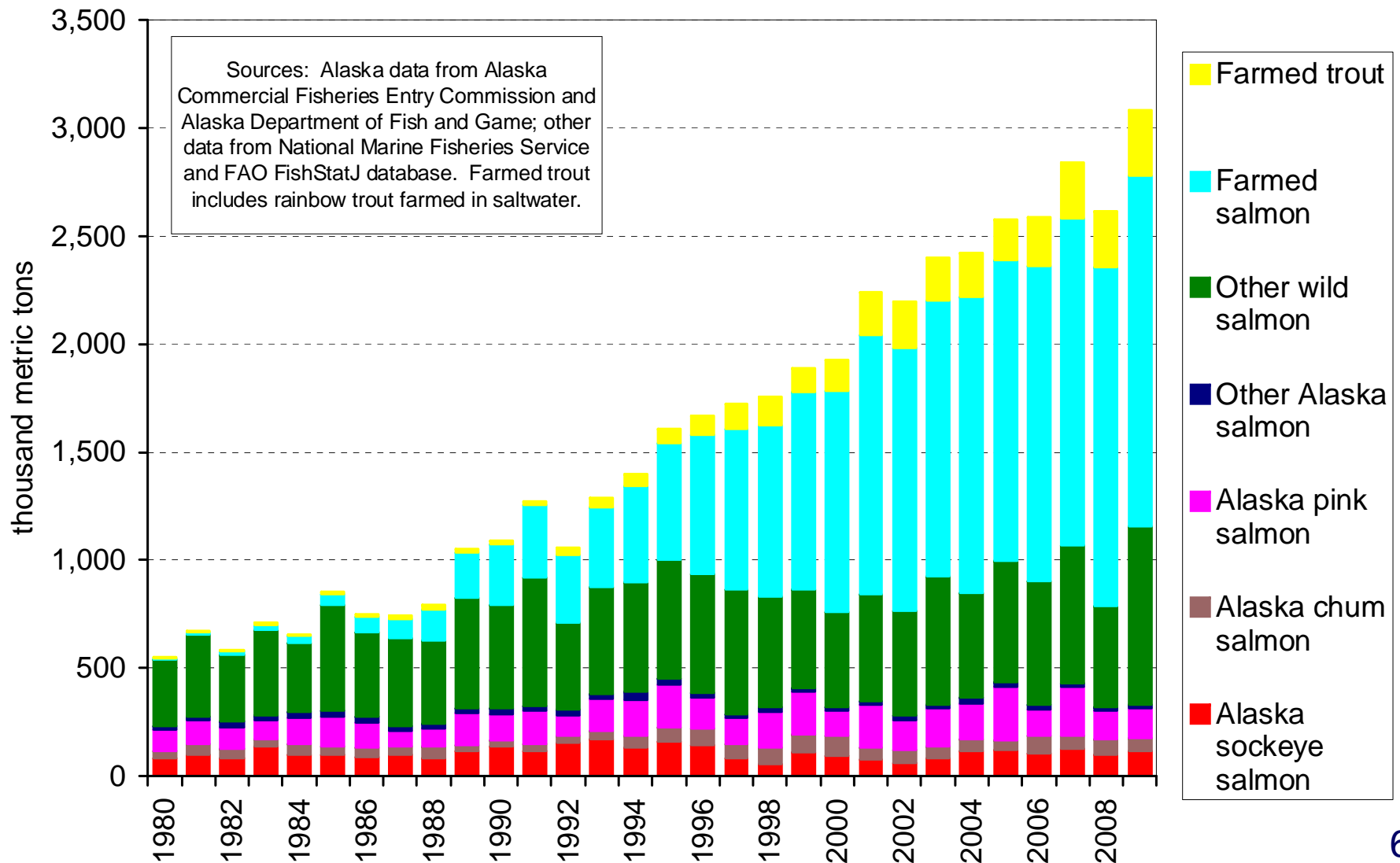
Norwegian export prices for farmed Atlantic salmon . . .

Average Weekly Export Price, Norwegian Fresh Atlantic Salmon (\$/lb)



Alaska has become a relatively small part of total world salmon supply.
Alaska salmon prices are driven in significant part by global supply and demand conditions which influence prices for all salmon.

World Salmon Supply: Wild and Farmed



Wild salmon competes with farmed salmon in world markets

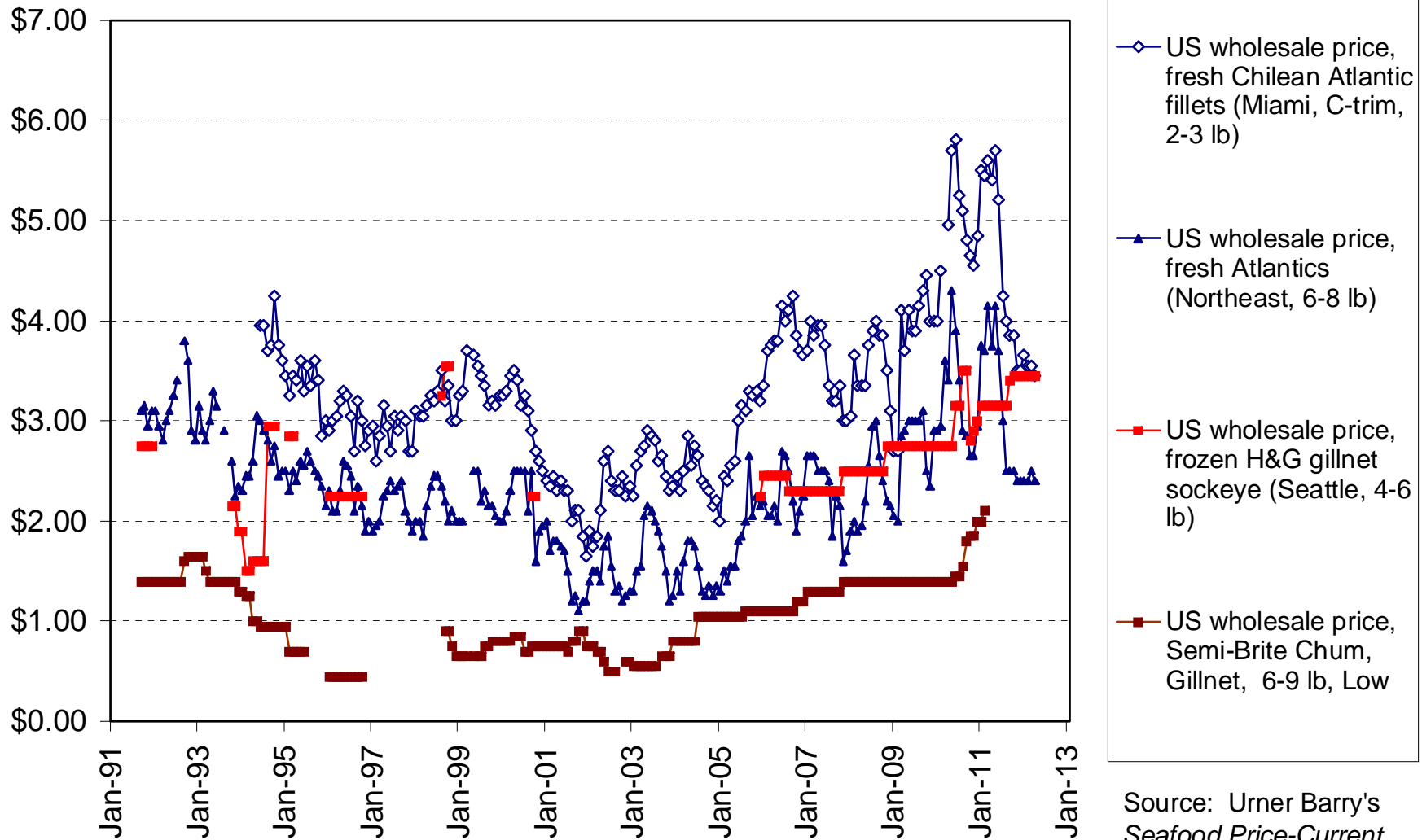
- Rapidly growing farmed salmon production glutted world markets in the 1990s and drove prices down for both farmed and wild salmon.
- When farmed salmon prices fell in the 1990s, wild salmon prices fell too, because buyers had cheap alternatives to wild salmon
- After 2002 prices rose for both farmed and wild salmon, because
 - World demand for salmon grew rapidly
 - Growth in world farmed salmon production slowed
 - Chile experienced major production declines due to disease.
- When farmed salmon prices rose between 2002 and 2011, wild salmon prices rose too, because buyers didn't have cheap alternatives to wild salmon

But Alaska wild salmon is different and better than farmed salmon!
Why should farmed salmon prices have any effect on wild salmon ??!!??

- Not everyone knows or thinks that wild salmon is different and better than farmed salmon
- What matters for wild salmon prices is not what the first and most loyal customers think and are willing to pay, but what the last and least loyal customers think and are willing to pay
- Even if a competitor's product is different and not as good as yours, that doesn't mean it doesn't affect your prices
 - If your competitor's product gets cheaper, you have to lower your prices or some of your customers will switch
 - If your competitor's product gets more expensive, you can raise your prices without losing customers
- The many things the Alaska salmon industry has done to strengthen markets since 2002 have helped to increase the premium that Alaska salmon commands over farmed salmon (or reduce the discount that Alaska salmon is priced at, depending on the species and product). But except in a few niche markets, they have not made Alaska salmon prices fully independent of farmed salmon prices.

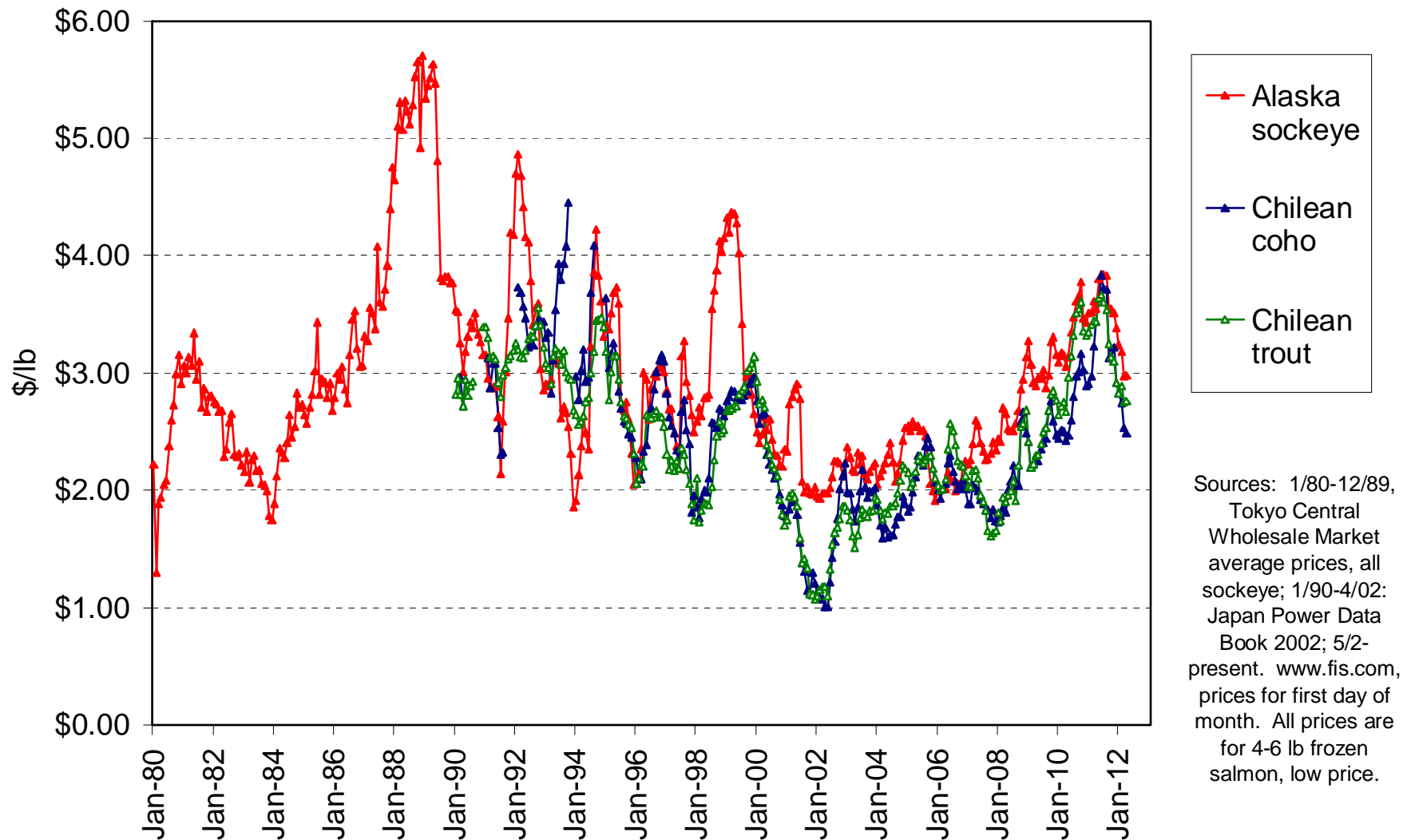
In a global market dominated by farmed salmon, wild salmon prices tend to move in the same direction as farmed salmon prices—both down and up.

Average United States Wholesale Prices,
Selected Farmed and Wild Salmon Products



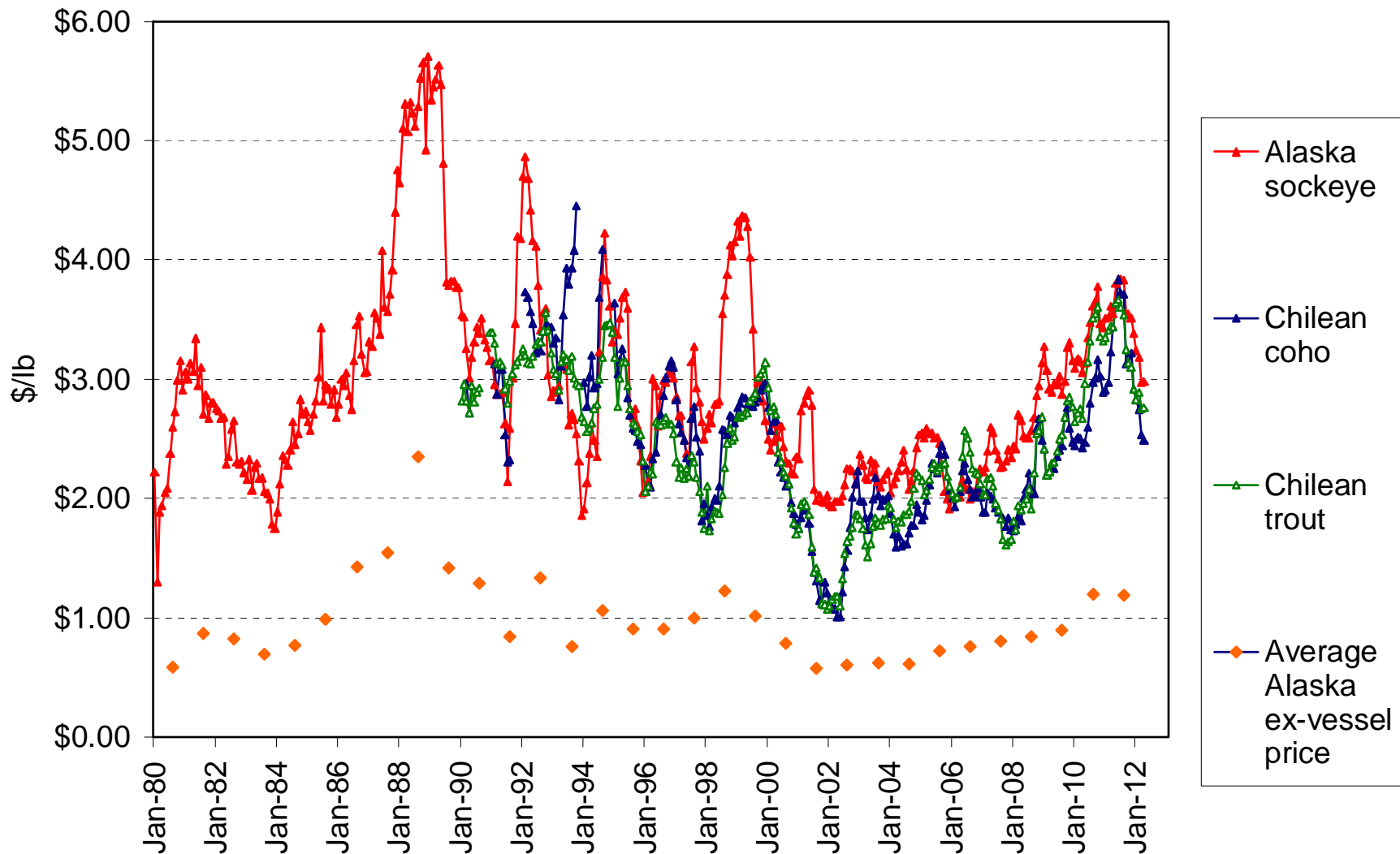
In a global market dominated by farmed salmon, wild salmon prices tend to move in the same direction as farmed salmon prices—both down and up.

Japanese Wholesale Prices for Frozen Salmon (\$/lb)

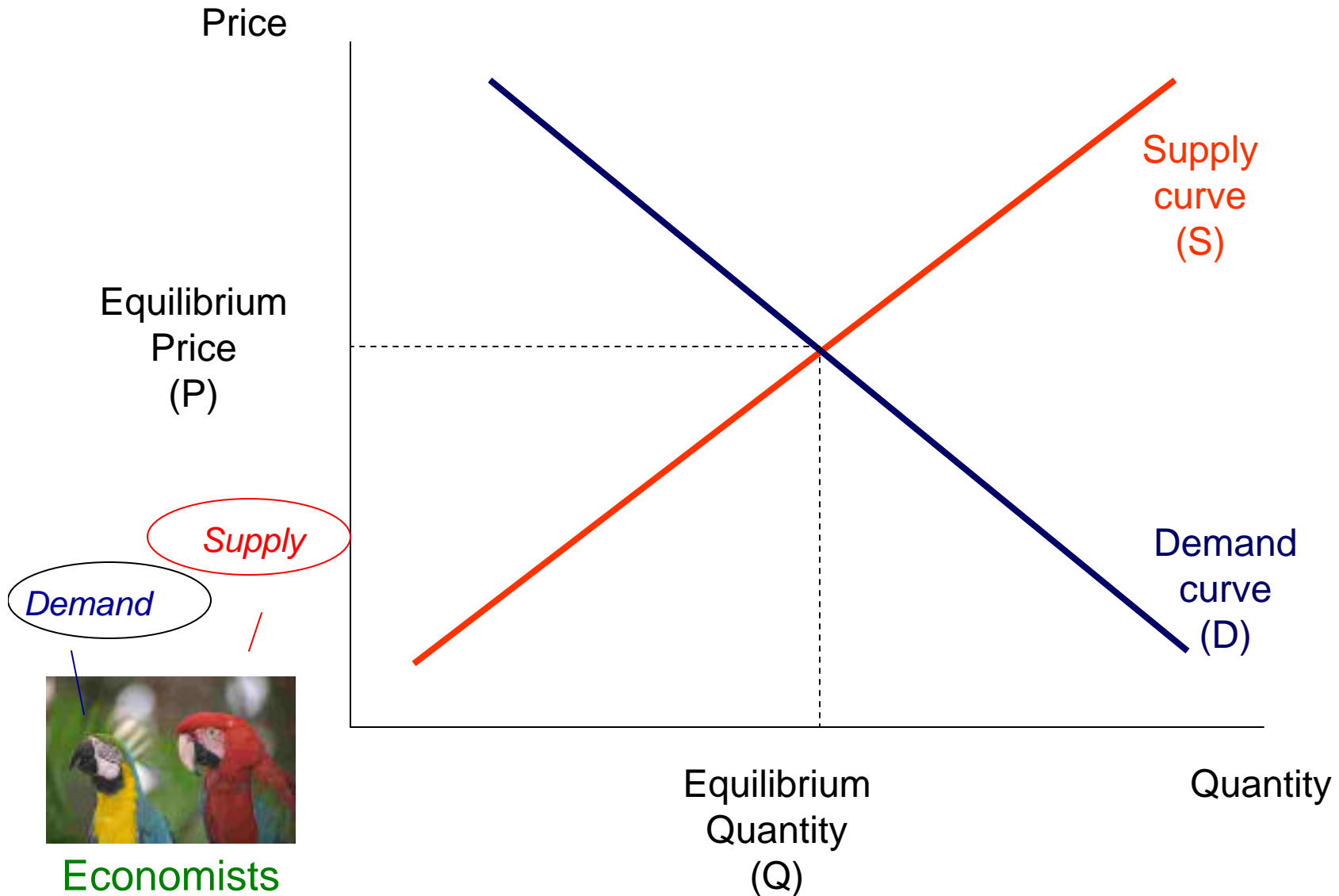


What happens in the wholesale end-markets where wild salmon compete with farmed salmon directly affects the ex-vessel prices paid to Alaska fishermen—both when wholesale prices go down and when wholesale prices go up.

**Japanese Wholesale Prices for Frozen Salmon
and Average Alaska Ex-Vessel Sockeye Price(\$/lb)**

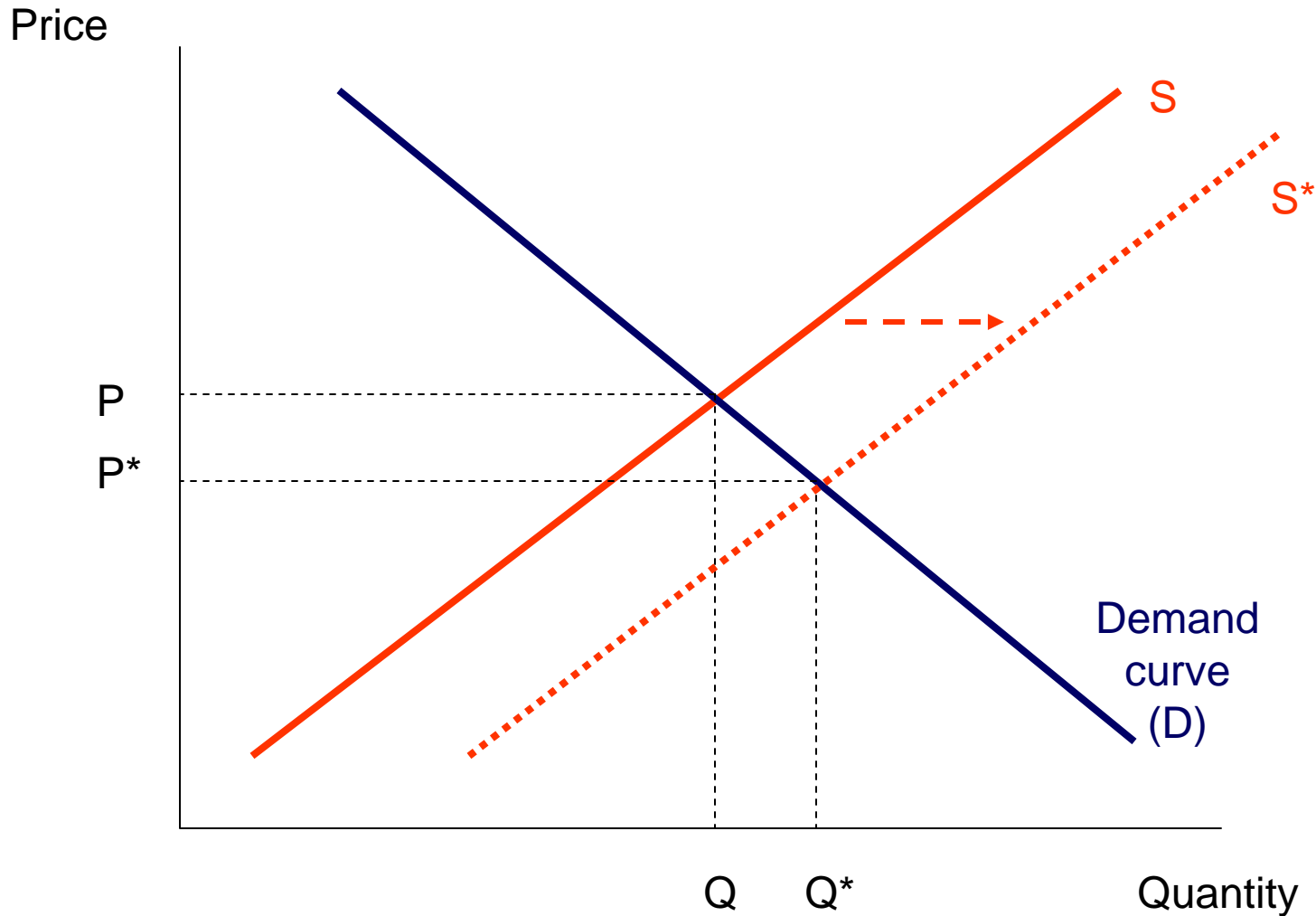


A brief review of supply and demand analysis—to make an important point



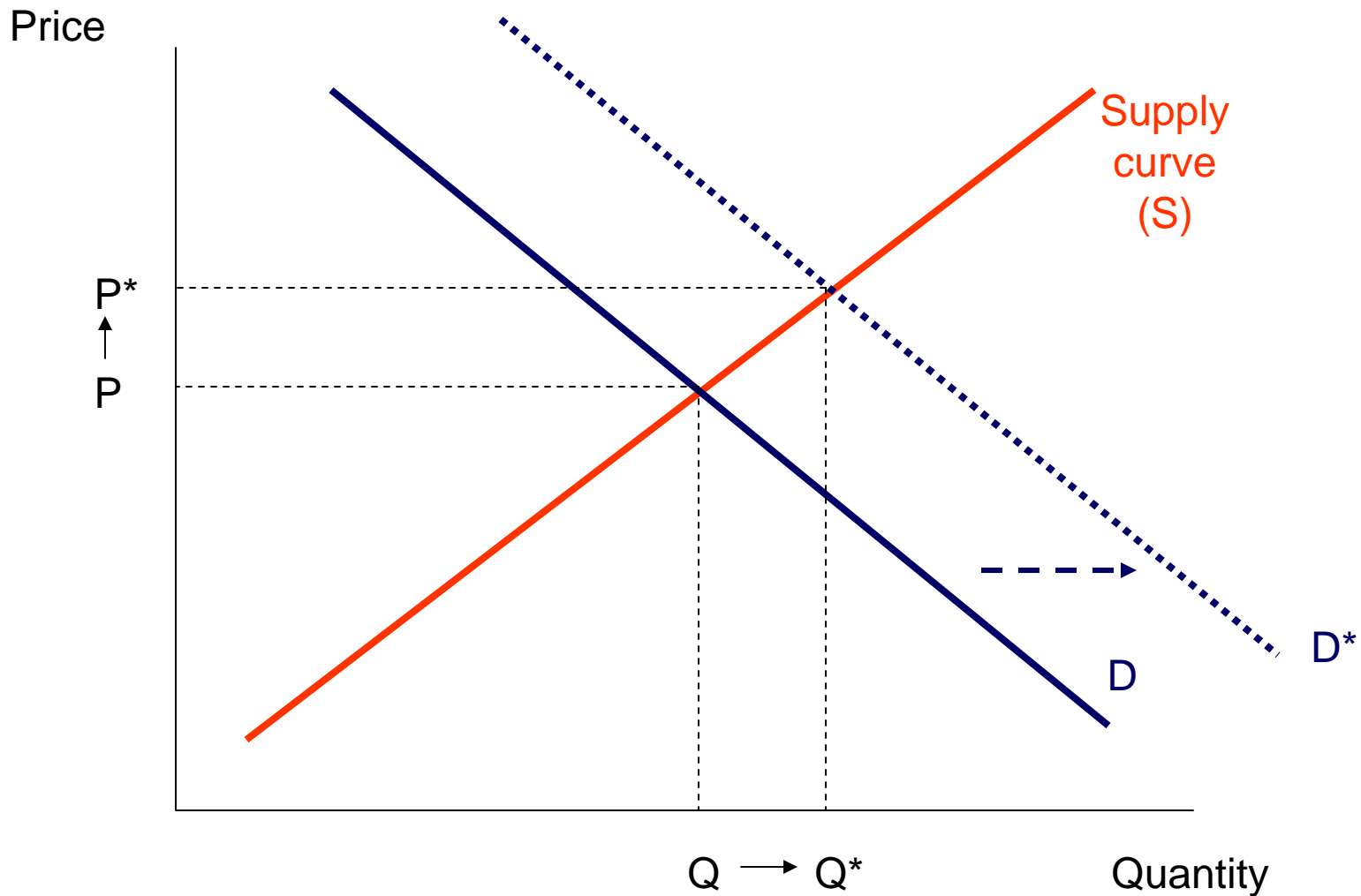
An increase in supply:

- * Occurs when producers are willing to supply more at any given price.
- * Causes the equilibrium price to fall, because producers have to lower their prices to get buyers to purchase the higher volume

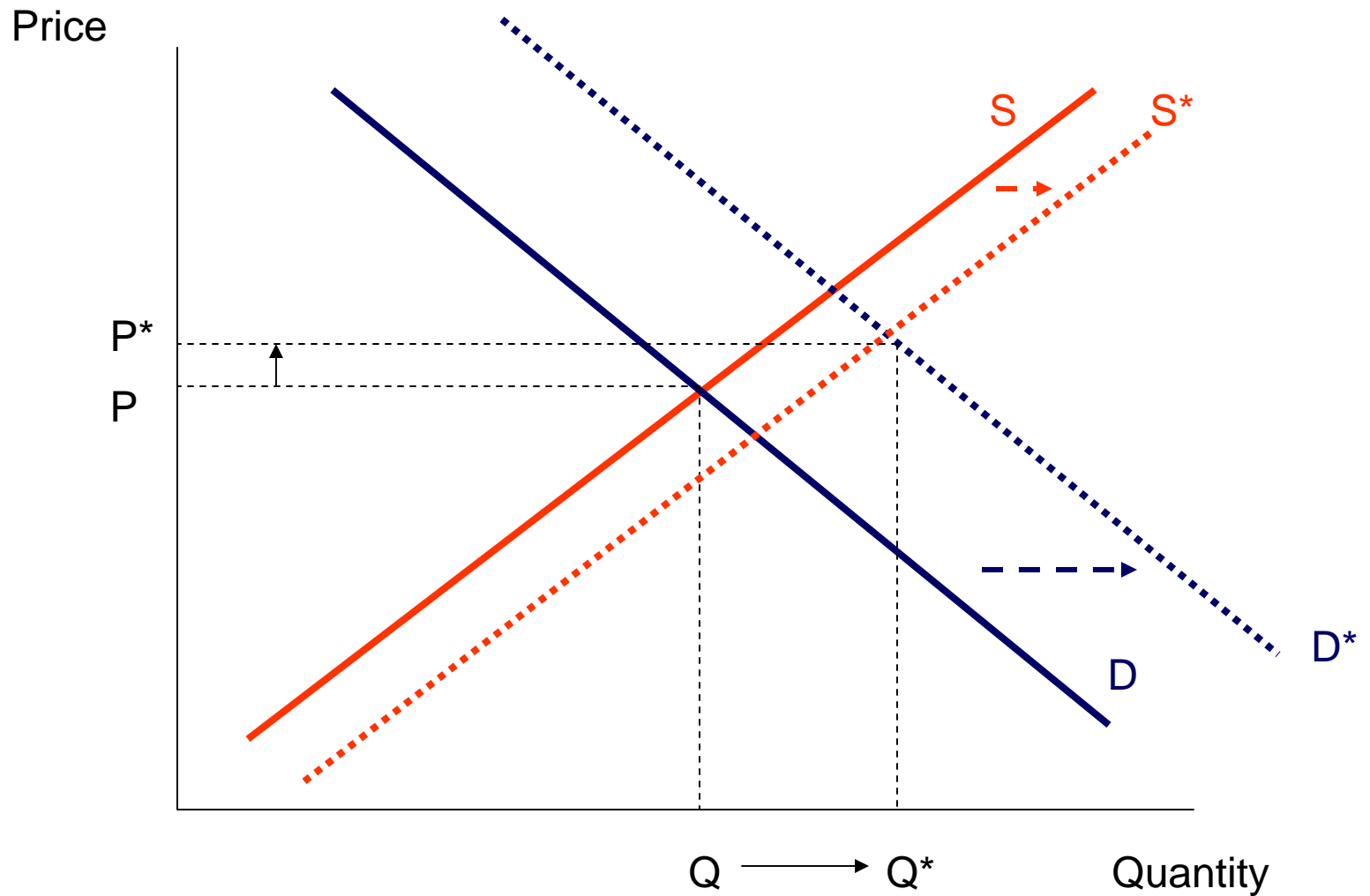


An increase in demand:

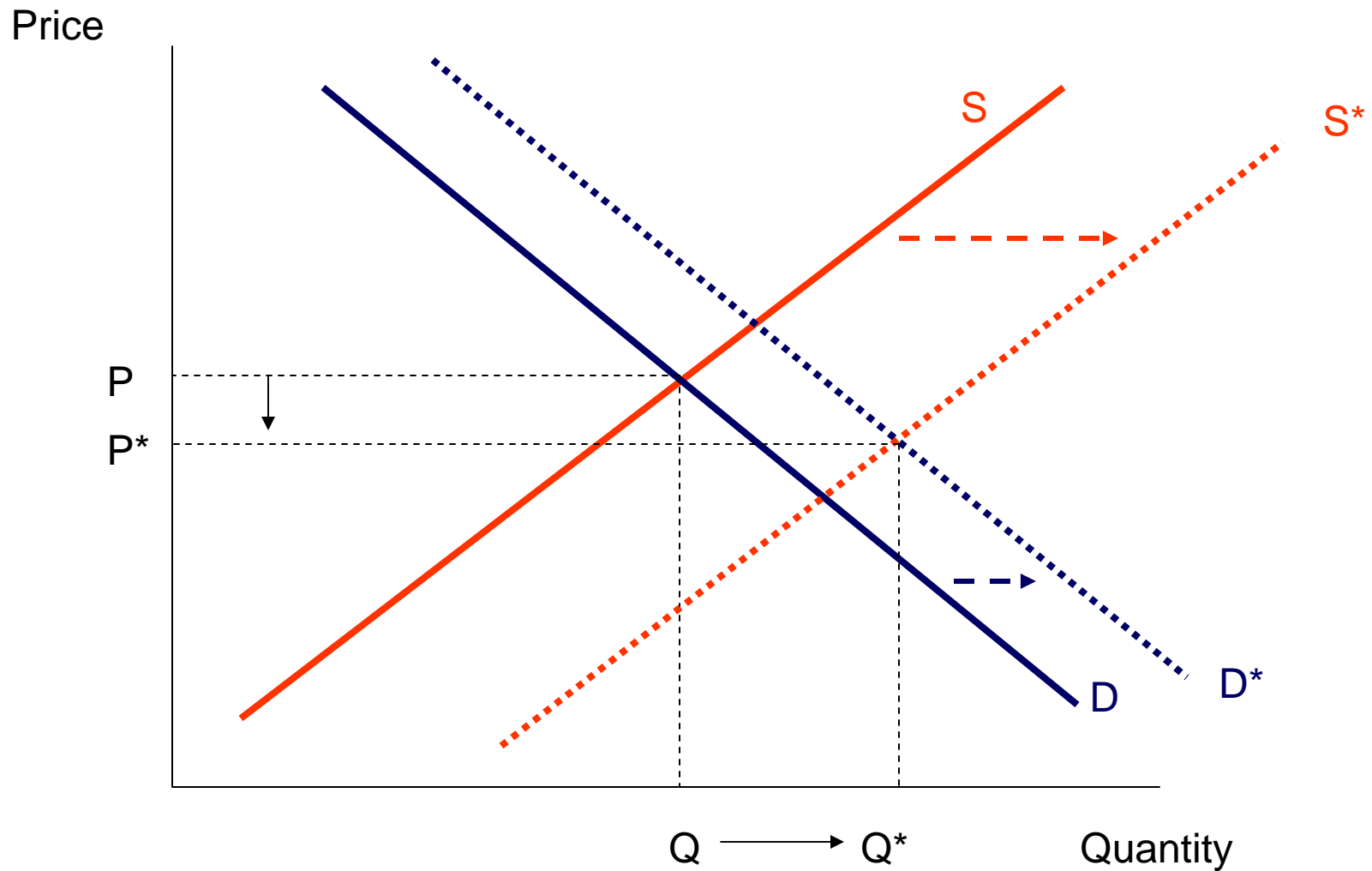
- * Occurs when buyers are willing to buy more at any given price.
- * Causes the equilibrium price to rise, because buyers have to raise their prices to get producers to supply the higher volume



If demand increases more than supply,
prices tend to rise.



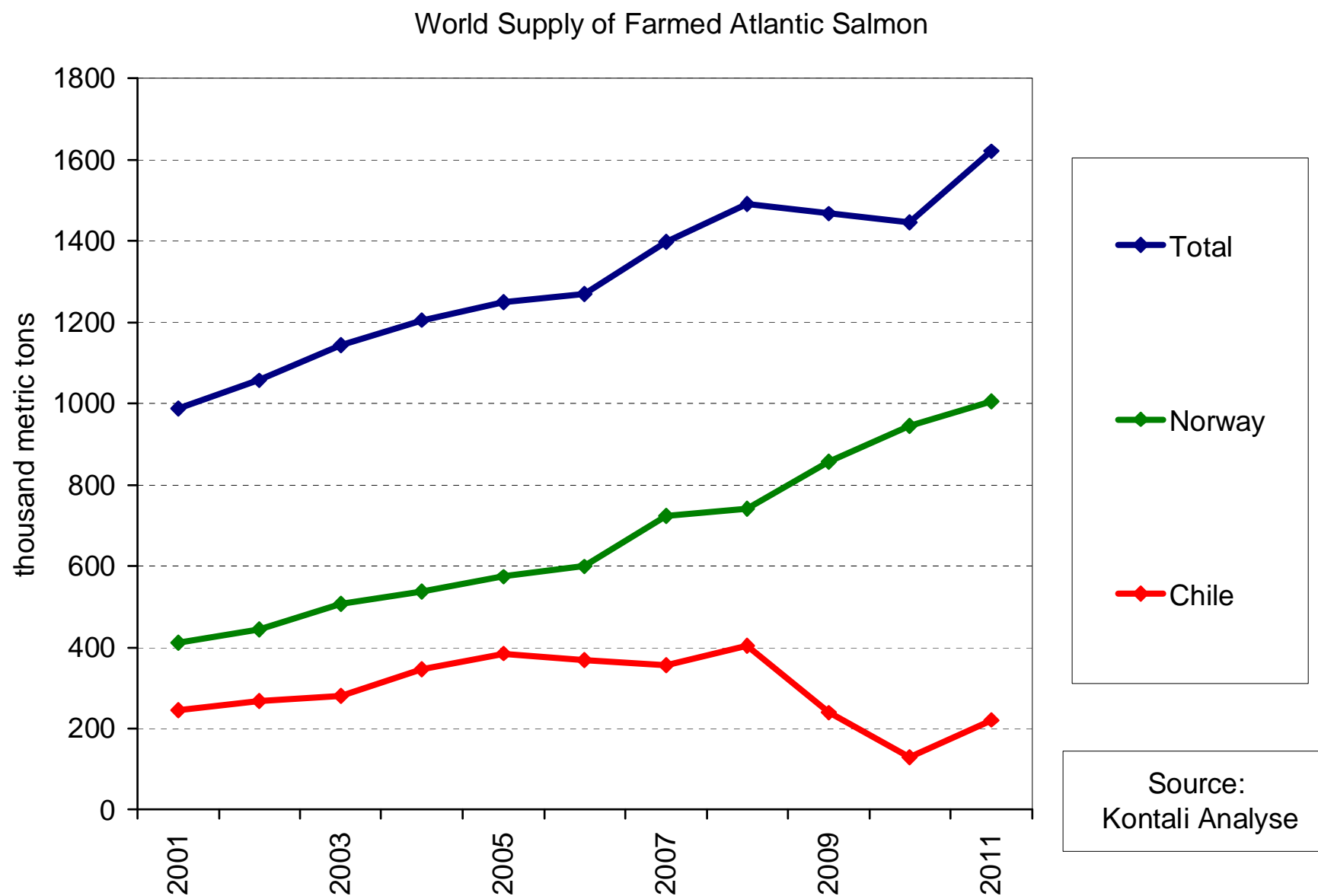
If demand increases less than supply,
prices tend to fall.



Probably the most important reason for the increase in both farmed and wild salmon prices over the past decade was that world demand for salmon was growing faster than world supply.

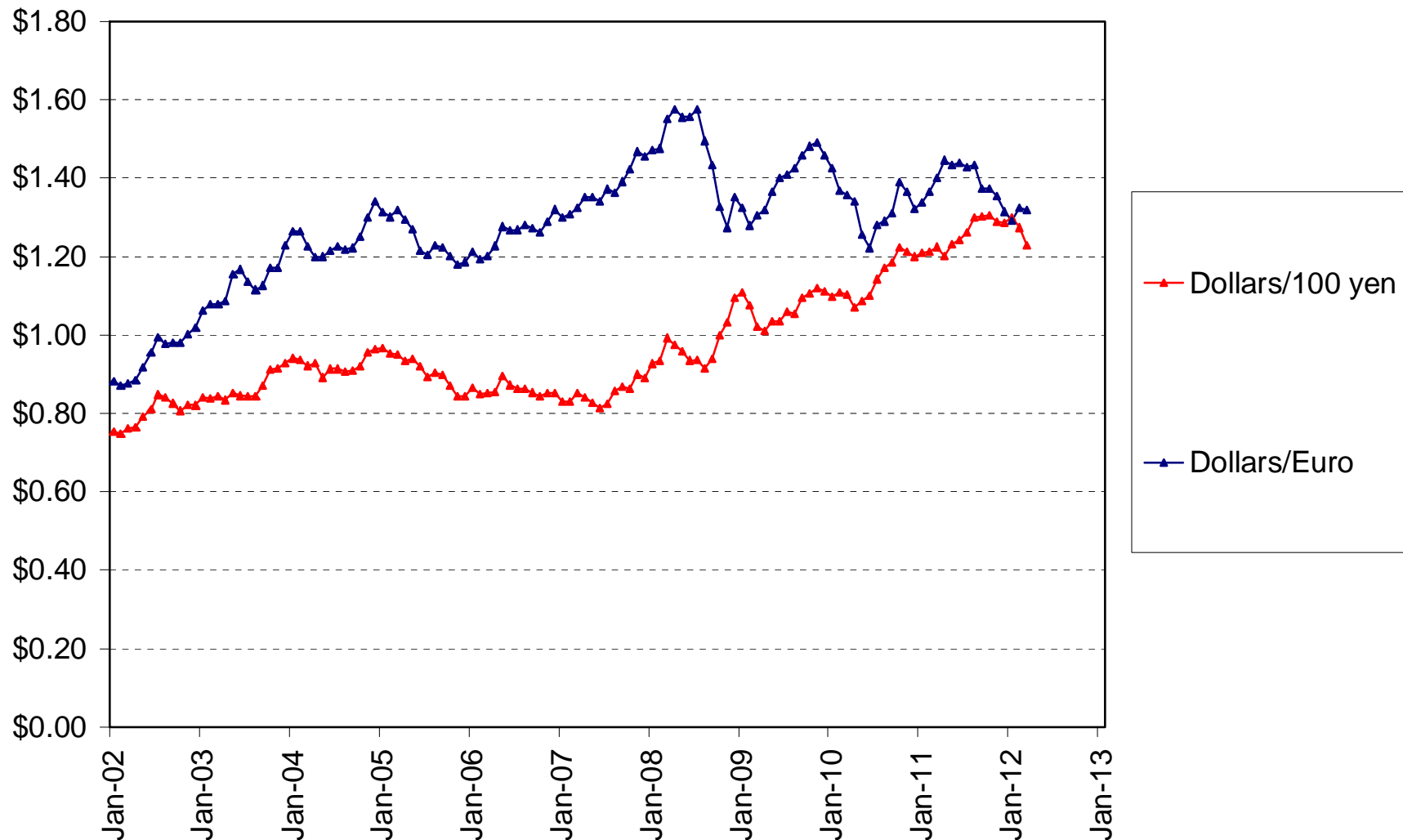
- Rapid demand growth due to:
 - Development of new geographic markets (Russia, Brazil, China, etc.)
 - Growing incomes in new markets
 - Development of new product forms
 - Sale of products from more types of retail outlets
 - Shifting consumer tastes
 - Growing familiarity with salmon
 - Health benefits
- Slower supply growth due to:
 - Wild supply limited by nature
 - Drastic drop in Chilean farmed Atlantic production due to disease
 - Higher feed costs

A drastic drop in Chilean farmed Atlantic salmon production due to disease slowed the growth in farmed salmon supply.



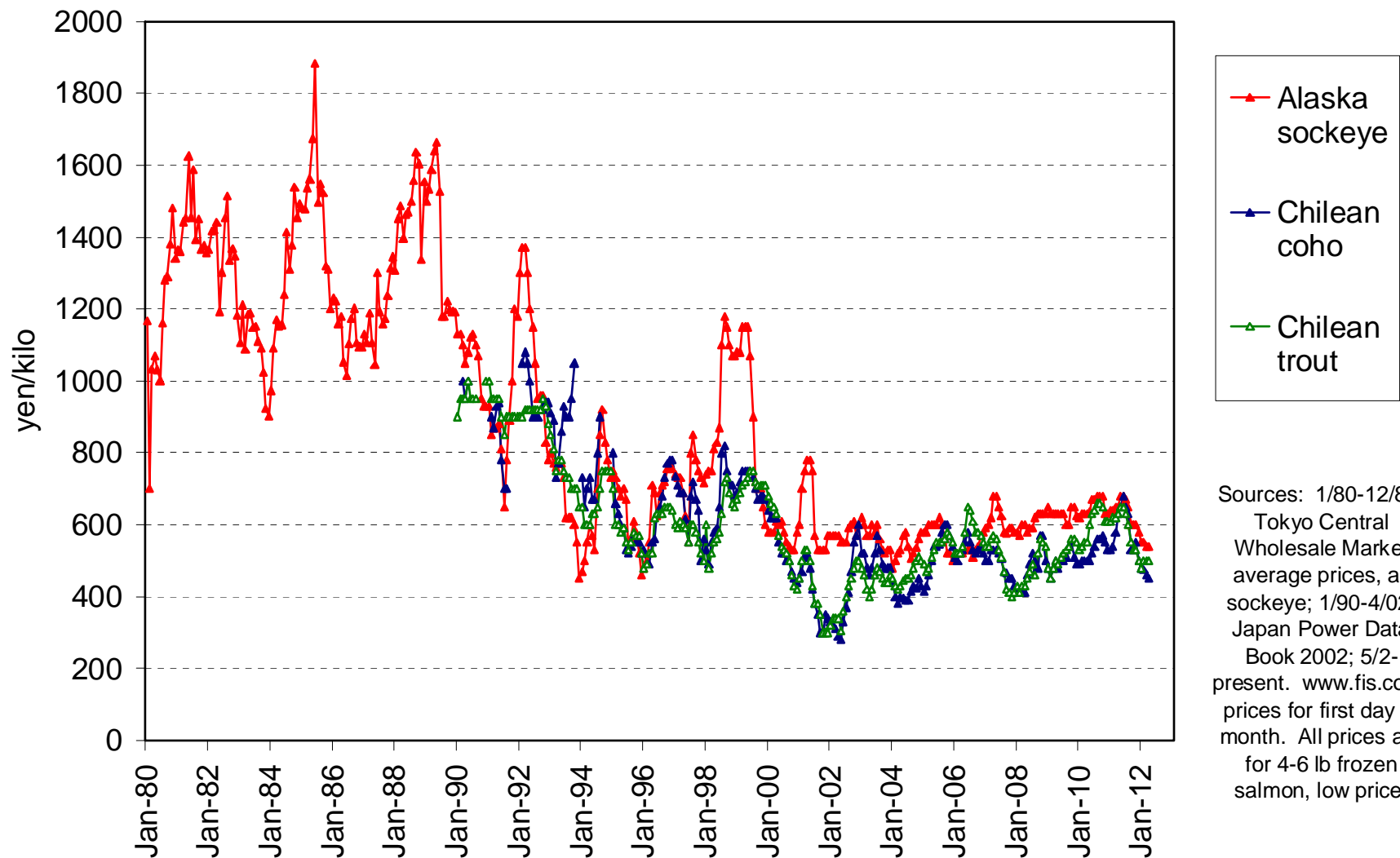
Another important factor contributing to the recovery in Alaska salmon prices since 2002 has been the strengthening of the Japanese Yen and the Euro compared to the dollar—which increases the prices Japanese and European buyers are willing to pay in dollars.

Trends in the Value of the Japanese Yen and the Euro



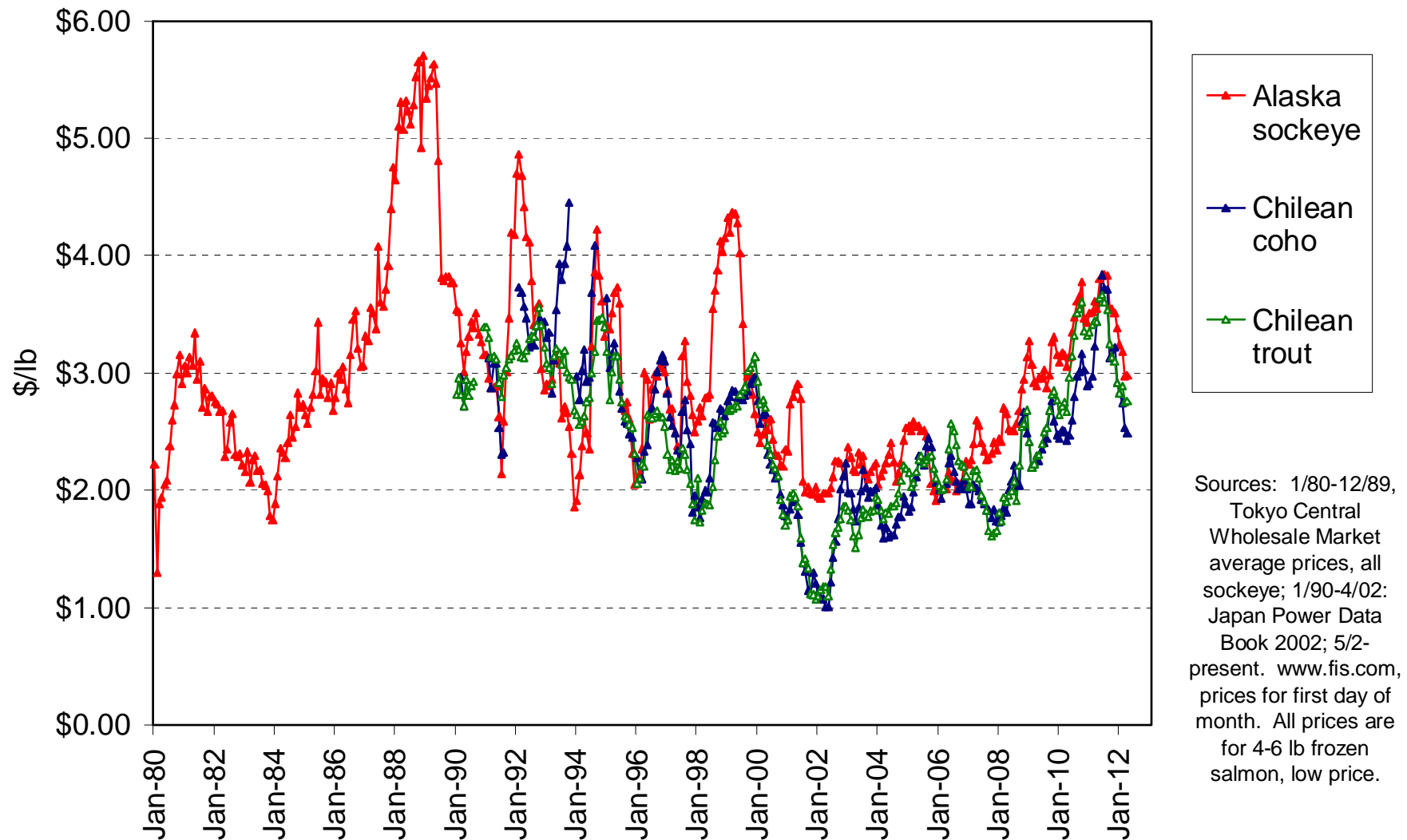
Japanese wholesale prices in yen/kilo . . .

Japanese Wholesale Prices for Frozen Salmon (yen/kilo)



The same Japanese wholesale prices—expressed in dollars/lb

Japanese Wholesale Prices for Frozen Salmon (\$/lb)



Many different factors continuously and simultaneously affect salmon markets. It is very difficult to quantify the relative effect of each factor on prices in the past—or to project what the combined effects of future changes in all the different factors may be on future salmon prices.

- Supply
 - Wild harvests
 - Farmed production
 - Inventories
- Demand
 - Consumer tastes
 - Consumer incomes
 - Exchange rates
- Costs throughout the value chain
 - Energy
 - Labor
- Market power
- Competition
- Speculation

3. Factors which may affect Alaska salmon prices in 2012

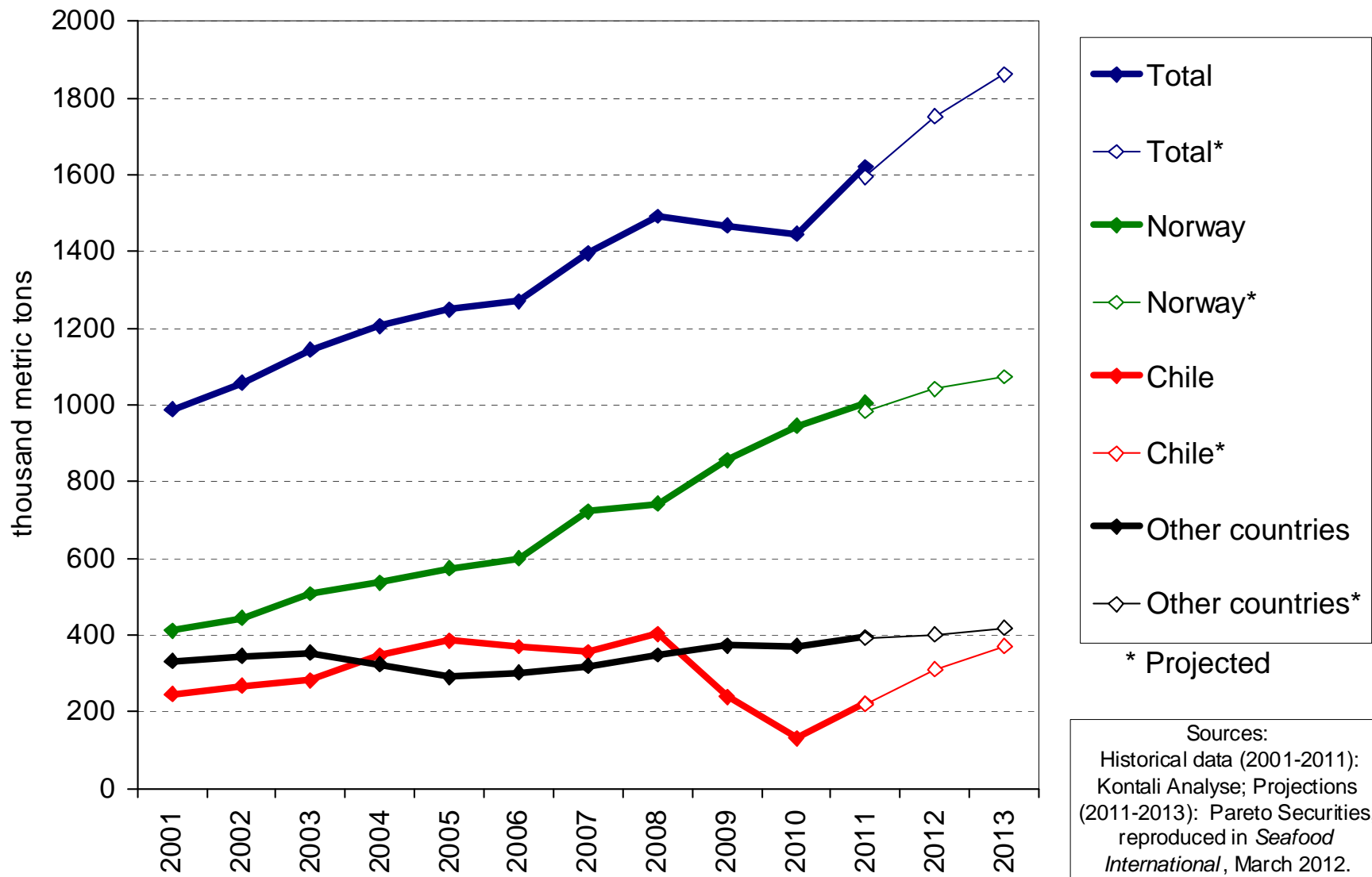
Several recent developments could signal a change in the trend over the past decade of increasing farmed and wild salmon prices.

- Rapidly growing world farmed salmon supply as Chilean production rebounds
- Steep falls in farmed salmon prices over the past six months
- Recent decreases in the value of the Japanese yen and the Euro

It is very difficult to predict what will happen to salmon prices! But anyone interested in Alaska salmon markets should pay close attention to what is happening to farmed salmon markets and with exchange rates. Both economic theory and past experience suggest that if farmed salmon prices fall and the value of the Japanese yen and the Euro fall, it will be difficult for wild salmon sellers to continue to sell wild salmon for the prices they could get in 2011.

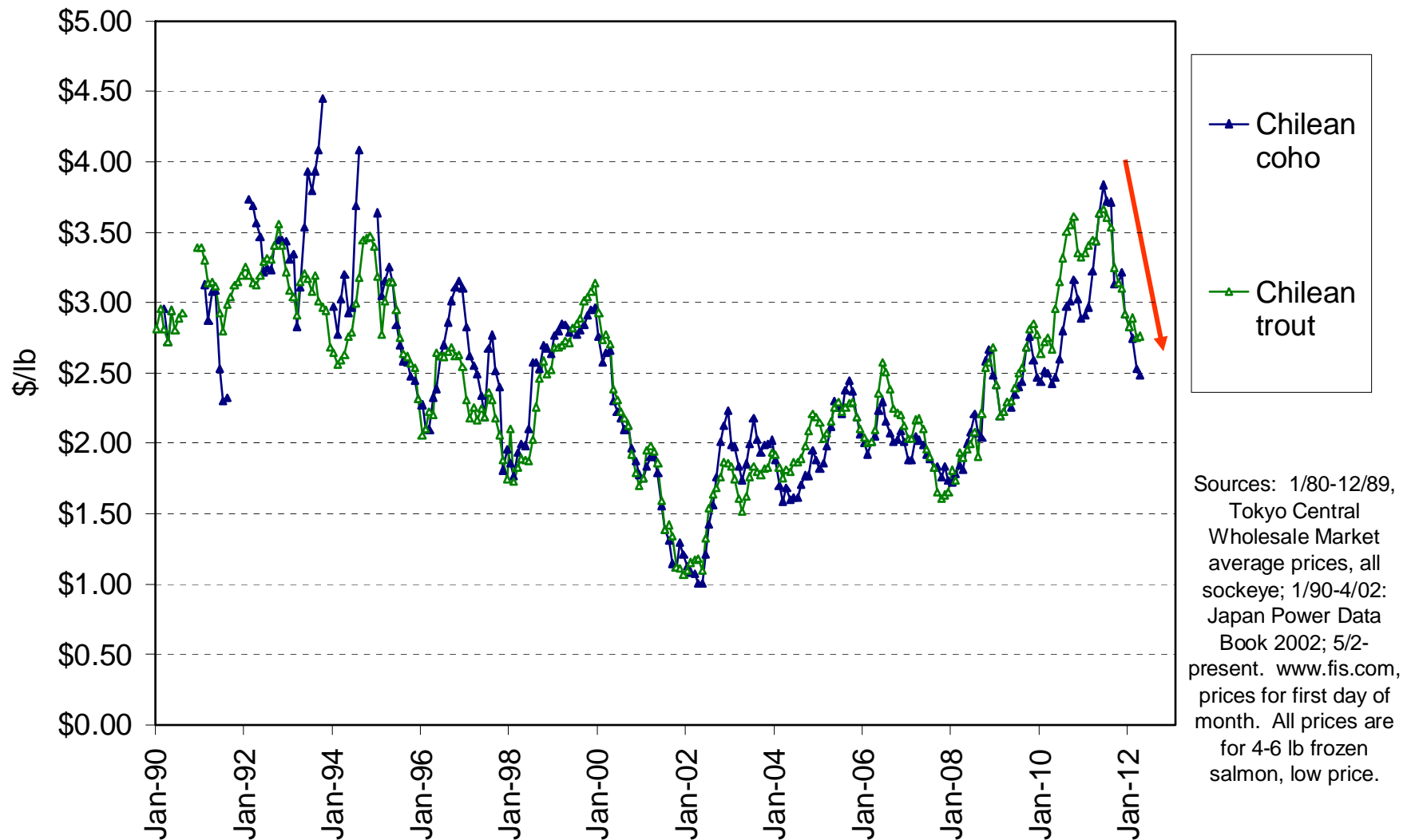
World farmed Atlantic salmon supply is projected to increase sharply as Chilean production rebounds.

World Supply of Farmed Atlantic Salmon



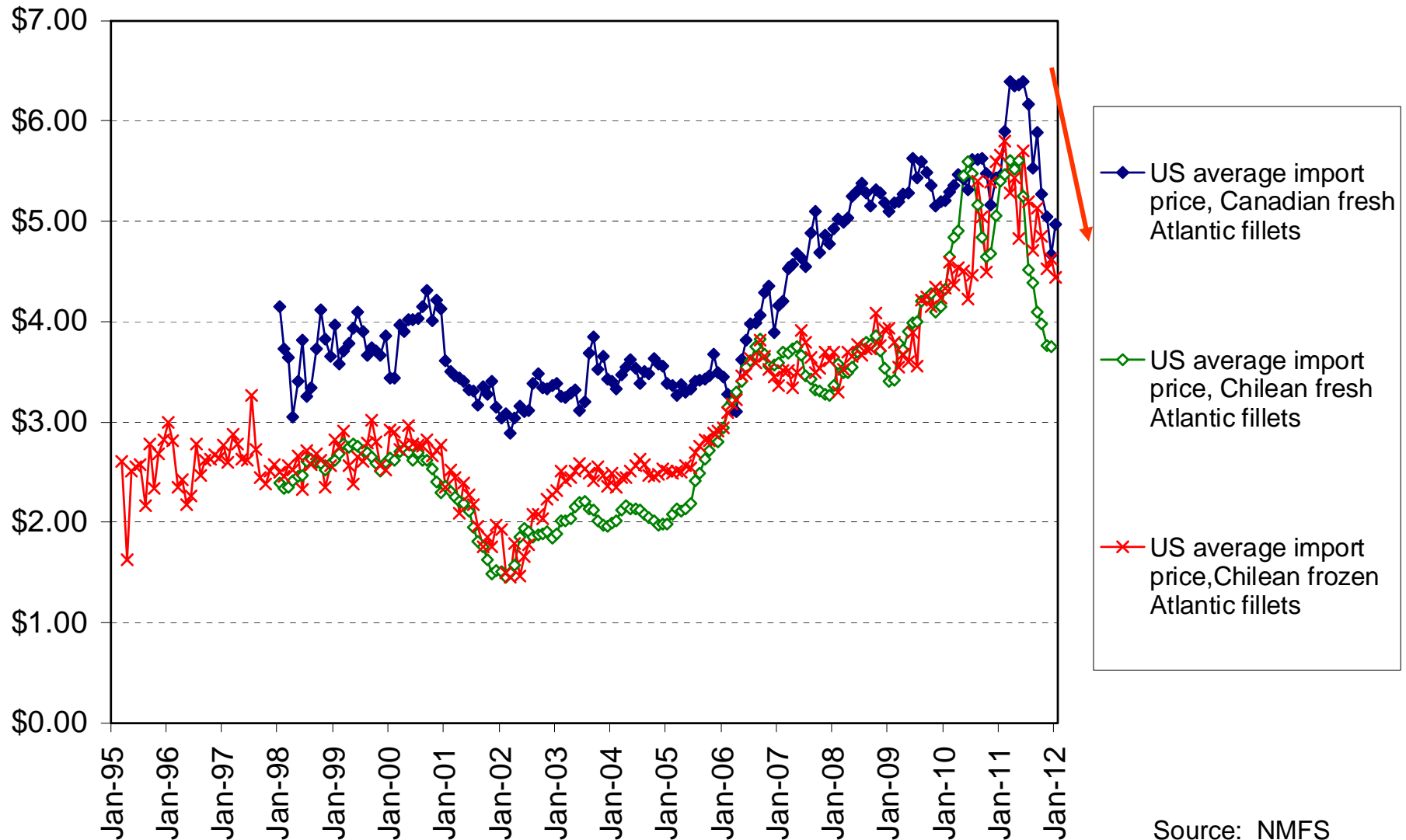
Farmed salmon prices have fallen sharply over the past six months . . .

Japanese Wholesale Prices for Frozen Farmed Coho & Trout (\$/lb)



Farmed salmon prices have fallen sharply over the past six months . . .

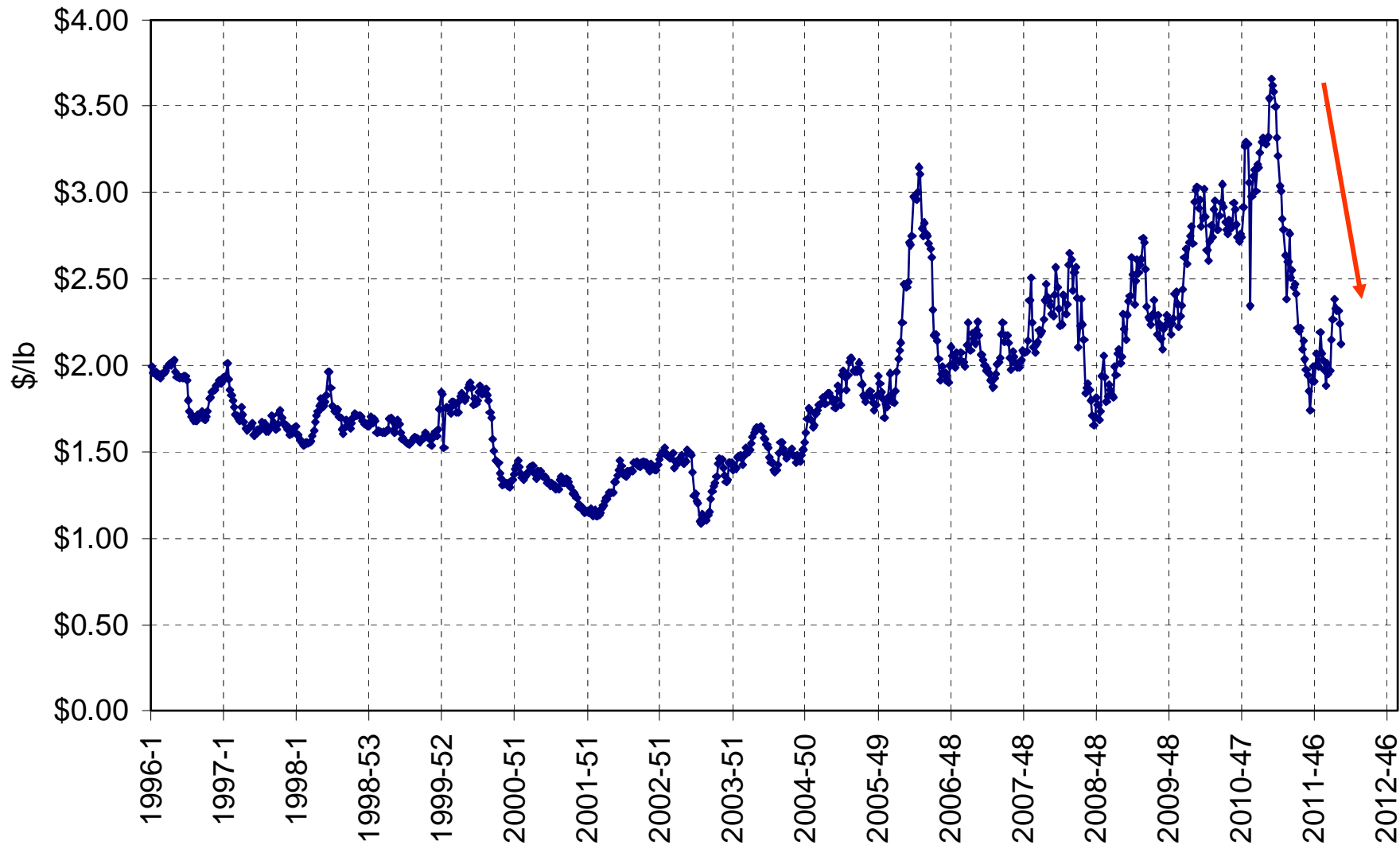
Average United States Import Prices of Selected Farmed Salmon Products(\$/lb)



Source: NMFS

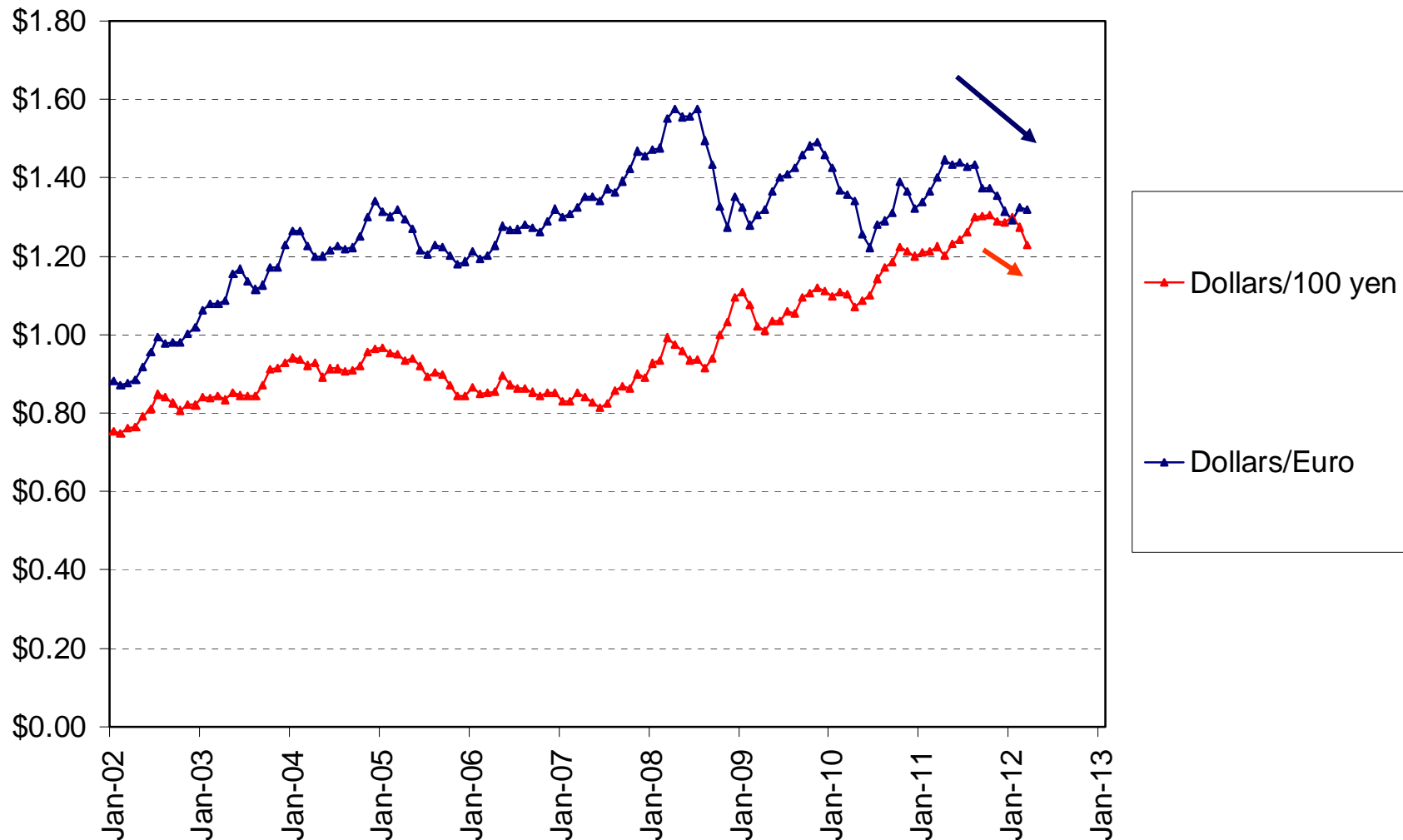
Farmed salmon prices have fallen sharply over the past six months . . .

Average Weekly Export Price, Norwegian Fresh Atlantic Salmon (\$/lb)



The dollar value of the Euro and the Japanese Yen have declined in recent months—reflecting market concerns about the Euro and recent changes in Japanese monetary policy.

Trends in the Value of the Japanese Yen and the Euro



4. Factors affecting the long-term future for Alaska salmon

There are many reasons for optimism about the future of Alaska wild salmon

- Global demand for salmon is likely to continue to grow:
 - Growing population
 - Growing incomes, particularly in rapidly developing countries such as China
 - Health benefits of salmon
 - New product forms appealing to a broader range of consumers
- Wild salmon are in limited supply
 - Potential for niche market differentiation
- Potential limits to future growth of farmed salmon production
 - Continuing potential for disease problems
 - Limits to fish oil and fish meal feed sources

Alaska wild salmon also faces potential future challenges

- Resource uncertainty
 - Regime shifts and climate change
- Potential for farmed salmon supply growth to exceed demand growth, glutting markets and depressing prices, as has happened in the past
- Potential for competition from non-salmon fish species as world aquaculture production grows
- World economic uncertainty
- Political uncertainty:
 - Sport-commercial allocations, hatcheries, Endangered Species Act, etc.

The Alaska salmon industry has seen dramatic changes
in every decade since statehood.

The future is likely to bring continued significant change!

Economics 290a: The Economics of Fish

- A University of Alaska Anchorage online distance education course
- Taught by Gunnar Knapp
- Taught entirely online
- Self-paced: Enroll any time, begin any time, work at your own pace
- Begins August 2012
- Intended for:
 - students majoring in fisheries or aquaculture programs
 - people working in jobs related to fish and the seafood industry
 - Anyone else with an interest in fish and the seafood industry
- What it's about:
 - How economics can help in understanding fisheries, aquaculture and the seafood industry.
 - Key insights of economics related to wild fisheries, aquaculture, fish processing, the seafood distribution chain, fish prices, fish marketing, economic impacts of the seafood industry, and important current fisheries and aquaculture policy issues
 - A broad overview of the global, American and Alaska seafood industries.
- For more information, contact Gunnar Knapp at Gunnar.Knapp@uaa.alaska.edu

5. Appendix: Data Sources . . .

Slides	Information	Data sources (described in the following slides)
6-7	Alaska salmon harvests	Alaska Department of Fish and Game Harvest Data
8-14	Alaska salmon production	ADF&G Commercial Operators Annual Reports (COAR) Data
16-21 31-34	Alaska salmon end-markets	ADF&G Commercial Operators Annual Reports (COAR) Data National Marine Fisheries Service (NMFS) Foreign Trade in Fisheries Products Data
35-37	Alaska salmon ex-vessel prices	Alaska Department of Fish and Game Harvest Data
38-41	Alaska salmon wholesale prices	ADF&G Commercial Operators Annual Reports (COAR) Data
42-46	Alaska salmon wholesale prices	Alaska Department of Revenue Salmon Price Reports Data
47-48	Alaska salmon ex-vessel value	Alaska Department of Fish and Game Harvest Data
49	Alaska salmon wholesale value	ADF&G Commercial Operators Annual Reports (COAR) Data
51-52	Earnings and permit prices, selected salmon fisheries	CFEC Basic Information Tables

5. Appendix: Data Sources (continued)

Slides	Information	Data sources (described in the following slides)
61, 68, 69, 68, 79, 83	Japanese wholesale prices	www.fis.com data, converted to \$/lb using Federal Reserve Bank of St. Louis Exchange Rate Data
62, 84	United States average import prices	National Marine Fisheries Service (NMFS) Foreign Trade in Fisheries Products Data
63, 85	Norwegian wholesale prices	Statistics Norway Weekly Export Prices, converted to \$/lb using Federal Reserve Bank of St. Louis Exchange Rate Data
67	United States wholesale prices	Urner-Barry's Seafood Price Current
86	Exchange rates	Federal Reserve Bank of St. Louis Exchange Rate Data

Alaska Department of Fish and Game (ADF&G)
Salmon Harvest and Ex-Vessel Price Data

- Annual average Alaska salmon harvest and ex-vessel price data are posted at this Alaska Department of Fish and Game (ADF&G) Commercial Fisheries Division website:
<http://www.adfg.alaska.gov/index.cfm?adfg=commercialbyfisherysalmon.salmoncatch>
- The data shown in this presentation for the years 1994-2011 are posted by individual years at the link named “Alaska Commercial Salmon Harvests & Exvessel Values, 1994-2011”
- Data for earlier years were provided by the Commercial Fisheries Entry Commission.
- Note that the price data (which were used to estimate value) are based on Commercial Operator Annual Reports (see the next slide in this appendix) for all years through 2010. Since these reports are not yet available for 2011, the price data for 2011 are preliminary ADF&G estimates. It is likely that they understate actual 2011 ex-vessel prices because they do not include post-season adjustments.

Alaska Department of Fish and Game (ADF&G)
Commercial Annual Operator Reports (COAR) Data

- The Commercial Operator Annual Reports (data) are compiled by ADF&G based on “Commercial Operator Annual Reports” which Alaska fish processors are required to submit to the Alaska Department of Fish and Game in April of every year. In these reports they are required to report the total volume of fish purchased, by species and area; the total amount paid for fish purchased, by species and area; the total volume (weight) of production, by product, species and area; and the total first wholesale value of production. Information about the COAR reporting forms is at <http://www.adfg.alaska.gov/index.cfm?adfg=fishlicense.coar>
- The COAR data are not posted on the internet or published regularly by ADF&G (which is unfortunate), but are available by special request from ADF&G.
- The data used to prepare these graphs were provided to me by ADF&G over a number of years.
- For the purposes of these graphs, I have grouped all production into five product categories: “canned,” “frozen,” “fresh,” “roe” and “other.”

Some important things to keep in mind in looking at the COAR data graphs:

- The data are statewide data. They group together production from all areas of the state, and thus conceal sometimes significant differences between areas in the mix of products produced from different species as well as the wholesale value of production. Thus year-to-year differences in the statewide mix of products produced or average prices may reflect in part changes in the relative share of production from different areas.
- The data are for aggregate product categories. Thus year to year changes for a product category may reflect changes in the relative mix of products within that category. For example, “canned salmon” includes both “talls” and “halves”. Halves usually sell for a higher average price per pound than talls. If the share of halves in total canned production increases, the average price per pound for all canned salmon production will increase—even if the prices for both talls and halves remains the same.
- The data are not necessarily 100% accurate. Errors may have crept in when processors reported the data, when ADF&G entered the data in their database, or when I analyzed the data. It is most useful to focus on long-term significant trends illustrated by the data, rather than any specific figure for any particular year.
- The data do not include production during the most recent (2011) salmon season, as these data will not be reported until April of 2012.

Alaska Department of Revenue Salmon Price Reports Wholesale Price Data

- Every four months, “large” Alaska salmon processors (those with sales exceeding 1 million pounds in the previous calendar year) are required to submit salmon price reports to the Alaska Department of Revenue. These reports are available at:
www.tax.alaska.gov/programs/programs/other/fish/salmonreports
- The reports include average wholesale prices (total value / total volume) reported by all “large” Alaska processors for the following four-month periods:
 - January-April (I)
 - May-August (II)
 - September-December (III)
- The graphs in this presentation show average wholesale prices since 2001 for the six major product forms for Alaska salmon

National Marine Fisheries Service (NMFS) Foreign Trade in Fisheries Products Data

- The National Marine Fisheries Service posts very detailed data online about U.S. exports and imports of fisheries products at:
<http://www.st.nmfs.noaa.gov/st1/trade/>
- The data presented in this presentation were calculated from the “Monthly Trade Data by Product, Country/Association”:
http://www.st.nmfs.noaa.gov/st1/trade/monthly_data/TradeDataCountryMonth.html

Commercial Fisheries Entry Commission (CFEC) Basic Information Tables

- The Commercial Fisheries Entry Commission (CFEC) posts “Basic Information Tables” for each Alaska salmon fishery on its website at: <http://www.cfec.state.ak.us/bit/MNUSALM.htm>
- These tables provide a useful summary of trends since 1975 in each salmon fishery for numbers of permits issued/renewed, numbers of permits fished, total pounds harvested, average pound harvested, gross earnings, average earnings, and average annual permit prices.
- The most recent data currently available are for 2010.

www.fis.com

- The seafood industry trade information website www.fis.com posts wholesale price information for many different species of fish at many different markets around the world. These data are proprietary: you need to subscribe to the website in order to access them.
- The Japanese wholesale prices shown in the graphs in this presentation are the Tokyo market wholesale prices reported for frozen Alaska sockeye salmon (Bristol Bay), frozen Chilean coho salmon, and frozen Chilean trout (all prices are for 4-6 lb frozen H&G) as of the first day of each month.
- To convert from prices in yen/kilo to prices in \$/lb, use the following formula:
$$\text{Price in \$/lb} = [(\text{Price in yen/kilo}) / (\text{exchange rate in yen/dollar})] / [2.2046 (\text{kilo/lb})]$$

Statistics Norway Weekly Export Prices

- The Norwegian Statistical Agency, Statistics Norway, posts weekly average export prices for fresh whole Atlantic salmon at:
<http://www.ssb.no/en/laks/>

- The posted wholesale prices are in NOK/kilo. They may be converted to \$/lb using Federal Reserve Bank of St. Louis exchange rate for the Norwegian currency (NOK), using the following formula:

$$\text{Price in \$/lb} = [(\text{Price in NOK/kilo}) / (\text{exchange rate in NOK/dollar})] \\ / [2.2046 (\text{kilo/lb})]$$

Urner Barry's Seafood Price Current

The image shows the front page of the 'seafood PRICE CURRENT' newsletter. The title is prominently displayed at the top left. Below the title, there is a large table with multiple columns and rows, containing numerical data representing wholesale prices for various seafood products. The table is organized into sections, likely by product type or region. The overall layout is typical of a financial or market data publication.

- Urner Barry's *Seafood Price Current* is an eight-page industry newsletter published twice each week which provides US wholesale price data for a wide variety of seafood products. These data are proprietary: you need to subscribe to the newsletter to get them. Information about how to subscribe to the newsletter or online market prices is at www.urnerbarry.com (telephone 732-240-5330).

Federal Reserve Bank of St. Louis Exchange Rate Data

- The Federal Reserve Bank of St. Louis posts detailed monthly and daily exchange rates between the United States dollar and other major currencies at <http://research.stlouisfed.org/fred2/categories/15>